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ANNOUNCEMENTS

1961 Annual Conference

The Thirty-First Annual Conference of the Southern Economic Association will be held on November 10 and 11, 1961, at the Peabody Hotel, Memphis, Tennessee.

Nominating Committee

President Frank T. de Vyver has appointed the following members of the Southern Economic Association to form a Nominating Committee to select officers for 1961–1962: Professor Milton S. Heath, University of North Carolina, Chapel Hill, North Carolina, Chairman; Professor William T. Hicks, University of Mississippi, Oxford, Mississippi; Professor Albert Griffin, Emory University, Atlanta 22, Georgia; and Professor Louis A. Dow, University of Oklahoma, Norman, Oklahoma.

William H. Wesson, Jr.
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The SOUTHERN ECONOMIC JOURNAL

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METHODOLOGY IN ECONOMICS—PART II*

FRANK H. KNIGHT

The University of Chicago

This paper goes on from the analysis of a Crusoe economy to discuss the second main division of economic theory, the mechanism of individualistic economic organization, the system of free markets and free enterprise. As in the former case, this will be treated chiefly with reference to stationary conditions, but more notice must be taken of progressive change in these, over time, as bearing on decisions between change and continuity without change. Obviously, the first new category to be introduced is *exchange*, which must first be considered under highly simplified conditions, and realistic complications introduced step by step. Exchange is free, by definition—to the parties as they stand at the moment, with whatever they have to exchange and their wants, for the things they have and for those they may acquire, which data are assumed to be known by each party in his own case; and any exchange that takes place will be advantageous to both parties, if they are competent judges of their own well-being. Moreover, exchange is the one possible form of mutually free association, especially for a group of considerable size. Economic rationality is presupposed; in methodology it plays the role of "frictionless conditions" in mechanics. Provisionally, it includes foresight of future conditions affecting decisions, which will "naturally" prevail if conditions are stationary.

Exchange on a considerable scale implies a market, which theory must deal with in a conceptually idealized form. Apart from freedom, this implies nothing as to moral idealism. The perfect market requires costless intercommunication, and is known by there being only one price or ratio of exchange for the same goods at any time. For simplicity, we add the assumption of "perfect competition," with a practically unlimited number of independent buyers and sellers, excluding monopoly and monopoloid action. It is also necessary to start with other simplifying assumptions. The chief of these is that each party produces and exchanges a single good (or personal service), finished, ready for consumption, and no, or negligible, durability. This will allow production and exchange of goods alternating over short intervals, but without introducing "capitalization." Each party also either uses a single (scarce) productive resource or, if more than one, his decision on their best proportions is made privately, outside of the market. That is, there is to be no buying and selling of productive services, or productive agents, whether "primary" or intermediate products, including all goods of significant durability. If all product is not exchanged, each producer's demand for his own output is considered part of the market demand, eliminating the complication of an "income effect."[1]

However, because of its vital relevance for social-economic policy, I wish, before continuing the analysis of a simplified product-exchange economy, to refer to a still simpler social situation—a society without economic organization of any kind. It will be made up of families each practicing the economic life of a "Swiss Family Robinson" or a pioneer family in the wilderness, but with whatever cultural, "sociable" or religious social life one may please to imagine. Each "Robinsonia" unit is, however, to be free from

* Part II of this article deals with Economic Organization: Concepts and Principles of Free Enterprise. Part I, which appeared in the January 1961 issue of this Journal, pages 185–193, presented General Considerations and Basic Concepts.

[1] The postulate of a single productive resource, conveniently thought of as "labor power," yields that "early and rude state of society," used as a "model" by Adam Smith to begin his discussion of "The Component Parts of Price." (*Wealth of Nations*, Chap. VI.)

Ignored here is the Böhm-Bawerk model of a number of parties coming together each with some supply of his own good; I merely note that the course of events leading to an equilibrium, and the result, would be indeterminate within limits, as shown by Edgeworth.

the stationary-state restrictions as to saving and investment, i.e., sacrificing consumption to produce additional personal capacity or "property," strictly for its own use. Further, each may undergo changes in tastes, as well as increase of technical knowledge or skill and material equipment. The points for emphasis are, first, that under these conditions there would be inequality of living standards, wealth and poverty, such as are found in the life of our society, *and* the same tendency for inequality to increase, because one who has more productive power at any time can more readily acquire still more. Secondly, assuming normal human feelings and the requirements of continuing social life, the same occasion and the same moral obligation would be present for the stronger or more fortunate to help the weak or unlucky that exist in an advanced enterprise economy. That is, there would be the same need for "charity," individual or privately organized, and for action through law and government, to bring about an equitable distribution of the consumable means of life. (Of course any society requires laws and a government, for economic and other functions, though abstract economic theory is justified in ignoring its role.) In short, the basic ethical-economic obligations are entirely independent of the form of economic organization, or whether any such organization exists. It is assumed only that people are free moral beings, in contrast with (say) the mechanistic behavior assumed to prevail in an insect colony.[8]

Resuming what is called above the product-exchange or multi-Robinsonian economy: Apart from the implications just noted, the chief reason for discussing the concept as a stage in a general analysis is to picture a market organization without the entrepreneurial relation, and then by introducing the latter to bring out its nature and significance. Historically, we might speak of a "handicraft" economy, since in the late Middle Ages and early modern period it was extensively developed, forming an intermediate stage in the transition from the mainly self-sufficient manorial economy to the entrepreneurial form now typical, with much diversity of detail. The pattern still persists to some extent in agriculture and small shops, where a family produces and sells a product. The main features for our purpose here are negative. Exclusion of this buying and selling of productive services eliminates the problem of "distribution" in anything like the form of a division of income in value terms between wages, rent, interest and profit. In our society, of course, the main controversies over ethics and social policy center around the relations between these categories. "Capitalism" was popularized, if not invented, by Marx, to promote the false idea that "capital" employs "labor," where in fact the entrepreneur employs both, acting as the agent of both producers and consumers, and subject to their control. The occurrence of property in our simplified system, as well as labor power, introduces no special problem, for the analysis or for social (legal) action.[9]

The treatment of "money" presents a serious difficulty for this stage of building up toward the complexity of real economic life. The best handling seems to be to assume that money is used,

[8] In fact, the concept of perfect economic rationality is finally mechanistic, and the perfect market could be approximated only if exchanges were made through vending machines, without personal contact. The foregoing paragraph needs clarification through the later analysis of the free-enterprise economy, especially with respect to exchange between employees and employers. Of the many "fool" beliefs about "capitalism" current in the public mind, none is intellectually more false or socially more costly than the idea that the employee is "working for" a capitalist or property-owner, or "management," or any "boss," any more than the latter is working for him—or that either is true. Exchange and its benefits are mutual, and in a free-market system nobody works for any one but himself, except as he chooses to do so, on charitable grounds. However, these self-evident generalizations by no means prove that under realistic conditions complete laisser-faire is socially ideal. That, it is equally a primary task of economic teaching to make clear, against the folly or prejudice of those who oppose governmental action on principle.

[9] Unless we should go into such a detail as inheritance, where there is some difference between owned goods and labor-power. It would be a problem only for the families, apart from legal action, and there not a very distinctive one. Its special importance even in this connection is vastly exaggerated in popular thinking. People rarely reflect critically on what would be involved in "abolishing" inheritance, or what would take its place. It has long been much modified by taxation, and this could not be carried to extremes without "socialism" in some form replacing individualism, or wrecking the private family as an institution. Reasoning and recent events join in indicating that socialism is incompatible with democracy or other free institutions. The problem of taxation, inevitable in the freest society, cannot be taken up in the scope of two articles.

but only Crusoe-fashion as a unit of value, a *numéraire*, arbitrarily chosen. This is conceivable under these simplified conditions, while an entrepreneurial economy could hardly function without "real" money, an intermediary changing hands in buying and selling, especially in the case of productive services and capital-goods. In our real economy, its use introduces an additional speculative element due to its changes in value, with consequences that could only be considered in a much fuller analysis. A brief survey may simply abstract from these problems, by assuming that money is "neutral," which it cannot be at all completely.

The main new phenomenon, in comparison with the Crusoe economy, that is introduced by production for the market, is anticipation of consumers' demand by producers—in so far as production precedes consumption. We may picture a certain amount of each good, produced in a short interval, being brought to market and sold competitively, fixing prices which guide producers for the next productive interval. (With services, production and consumption are of course simultaneous.) Under individualistic action, there would only accidentally and momentarily be a strictly correct adjustment of output to demand; the realistic expectation is unpredictable oscillations or gyrations about the theoretical position of equilibrium; perfect adaptation could result only from a universal consensus (free or enforced) in advance, on a detailed plan. The approximation to equilibrium that we observe is somewhat mysterious; it is no doubt due in part to a kind of subconscious consensus and in part to the tendency of errors in guessing to cancel out in the manner of a probability distribution. (One can contrive models to behave in various ways: one is pictured in the familiar spider-web diagram, but oscillation between the possible limits of all-or-none is perhaps as logical in the abstract.) In a system of considerable scope, the psychology of any producer's predictions would doubtless be a mixture of extrapolating price changes (more or less definitely statistical) with a vague impression of the social attitude—not an attempt to predict the behavior of other producers individually.

An observation important for policy as well as for general analysis is that anticipation of consumers' wants by producers makes it certain that they will attempt to "influence" consumers' choices—which introduces a serious complication for a realistic theory of demand. Logically speaking, consumers "buy" advertising and sales promotion as part of the product, and both are "products"; but that view does not seem realistic, though no distinction can be drawn between "really useful" qualities in the product and more or less adventitious accompaniments adding appeal. Consumers clearly want not only to have their wants foreseen for them, to be offered a wide range of goods for selection and rejection, they also want to be persuaded to buy and will even submit to pay the heavy cost of errors and waste. These costs could be largely avoided if consumers would do their own anticipating, under contractual responsibility, and such ordering in advance occurs to some extent. It would be impossible for the distant future, under "dynamic" conditions, and consumers want change, willed or anticipated, and also want surprise. Even under the simplified conditions assumed here, producers would "push" their respective wares, competitively. They would use the "arguments" they judged most effective, and success would follow those actually most effective, whatever their intellectual merits in relation to the "real utility" of the product. In a free society it is quite irrational to condemn persuasive action (short of "fraud") in business or politics, or in any sector of associative life.

Analysis of the free enterprise organization is the major task of economic science, and all that has gone before (in both of these articles) is properly introductory. Its main features are, again, to be introduced by stages, but only a few main steps can be considered here. The first will be to clarify the principle of entrepreneurship. Through the years it has more and more impressed me as important to define it apart from any connection with the relation between labor and property. The concept has meaning for a Crusoe economy, but it is even better to begin with two "Crusoes," planning to co-operate in production, and employing no scarce resources other than their own personal capacities, their "labor-power." We abstract from its maintenance or increase or decrease, arbitrarily treating it as "original and indestructible." (Like any real "land," it is neither; both, in the long view, are essentially capital goods.) We impose "stationary conditions" on the wants of Crusoe-A and Crusoe-B, and on their technical knowledge, which we assume to be the same for both. Mutual knowledge of one another's wants cannot

be assumed, being self-contradictory, as already observed; these must be predicted, subject to error, in planning production, and prediction of physical results will also be more or less inaccurate.

If two persons are to co-operate under these conditions, with specialized roles, several decisions must be made by agreement. The parties must jointly determine what goods are to be produced and the quantities, in what location or locations, by what techniques and what division of labor. Doubtless the most serious issues are the specific roles of the two parties in production and the division of the joint product between them. One can imagine both matters being settled by negotiation as work proceeds, or by agreement for some time in advance. But for men imbued with the "spirit" motivating modern economic society, the simplest and most probable arrangement would surely be for one as an active partner to "take charge" and make the concrete decisions (possibly subject to occasional argument) and for the product to be shared on the basis of a stipulated amount for the passive partner, the active one taking what is left in excess of this—or, if the result is less than the agreed payment, the active partner making up the difference.

The active partner then plays the role of entrepreneur, and the passive one that of a wage earner. The former's share is "gross profit," which may be positive or negative within any interval, as things work out. In the abstract, it can be analyzed into a "wage of management" compensating his own services, and a "pure profit," a final residual. But only widespread market competition could afford an objective basis for making the separation; and in reality, since "perfect competition" is impossible where uncertainty exists and problematic decisions must be made, the division is always more or less indeterminate or arbitrary. Hardly any category in analytical economics has been more misunderstood than profit, with the entrepreneurial function, both in popular thinking and unhappily also in the writings of economists; and accordingly, none has been more controversial. Real or "pure" profit must be conceptually distinguished from "gross" and from the return to either labor or property. The root of the matter is the obvious fact that any advance arrangement for the division of a joint product must depend on the expectations of the parties, which are fraught with uncertainties, and errors of prediction are inevitable. Because men differ widely in their concrete forecasts, and in judgment, and are in varying degree opinionated, and differ in the inclination to venture and to give or follow instructions, the two-fold function of making responsible decisions and taking the "risk" of their being more or less in error, is specialized to individuals, or to such small groups as can somehow reach agreement.

In a complex and large-scale society, economic freedom requires general agreement on the principle of competitive entrepreneurship in economic organization, with distribution of the product, apart from profit, on the individualistic principle of imputing to each unit of each productive service its contribution to the total value product. The second commitment is a general presumption, a principle to be qualified by social (politico-legal) action wherever there is sufficient ground for doing so. In any society, this productive contribution must be known, or estimated, as the basis of effective organization; voluntary departures from the principle of distribution are of course allowed, as "charity"; but these are not to be expected to an extent sufficient to obviate enforced departures, to secure values conflicting with individual freedom, where these are politically judged more important. Only general market competition or its equivalent can separately impute specific contributions, but any close approximation to "perfect" competition is impossible, either through voluntary action or by social compulsion. However, theoretical analysis must describe perfect competition, as a limiting case, and explain entrepreneurship and profit in terms of departures from the theoretical ideal. In real business life, the inseparability of responsible decision making and assumption of "risk"—really the "uncertainty" that cannot be measured or eliminated by grouping cases under the insurance principle —is somewhat obscured by the intervention of hired managers. But these act as the agents of the real entrepreneur, who assigns their duties and fixes their compensation, which acts are then the responsible decisions. The entrepreneur's income and function would not exist under perfect competition. That income is not the price of a service and cannot be known until the results are in, and not accurately even then, and may be either positive or negative.

The next step in our build up, already indicated, is to introduce into the product-market economy, and explicitly consider, markets for the productive services, the services of productive agents, human and non-human. For the purposes of analysis, the difference between personal and property services is still unimportant, and the agents themselves are still not to be bought and sold. We naturally think of this applying to laborers, but ownership of slaves would make no difference in principle, if they were only rented out, and were treated like other property, say work animals. The analytical distinction between rent and wages is purely nominal, and confusion might be avoided by using some common term, such as "hire." Maintenance of all productive agents, including replacement in kind without increase, is still to be provided for by their owners, the families—the minimum effective unit in a continuing society. The services are to be sold by individuals (who represent families) to entrepreneurs, also individuals (with the same qualification) at this stage of our construction. Entrepreneurs act as already indicated for the two-Crusoe partnership, except for buying productive services and making and selling products, both occurring in perfectly competitive markets. They anticipate consumers' demand, make all responsible decisions and assume the "risks"—i.e., uncertainties—of errors in judgment (and good or bad "luck"). All risk that is measurable, statistically or by calculation a priori, is assumed to be covered by insurance, organized in some way. Uncertainty is borne by entrepreneurs in the hope of securing a gross profit, imperfectly separable into pure-profit and compensation for labor, or property services—as already indicated, but the analysis will be carried further at the next stage of our construction.

Equilibrium for the system has already been roughly described; all productive services will be allocated and used (according to known technology) so as to yield the maximum satisfaction of consumers' demand (a complex of desires and purchasing power) and the owner of each item will receive in compensation the value product added to the total (which constitutes his purchasing power as a buyer of real product). In real life, the position of no gains and no losses by entrepreneurs is doubly impossible. Besides perfect competition in both sets of markets, it would require perfectly correct anticipations of all future vicissitudes on the part of all entrepreneurs. That includes foreknowledge by each of the decisions, not only of consumers but of all other entrepreneurs, which is not only practically impossible but theoretically self-contradictory. Such action would produce chaos, unless all activities were planned in concert in advance, which is antithetical to individualism and market competition. (Even though rivalry as a motive is excluded as inconsistent with economic rationality.) The ethics of the productive-contribution standard is a separate issue, too complex for consideration here. The principle manifestly cannot govern distribution among "individuals," half or more of whom will be "dependents" and, as already noted, has no application to the pure-profit of entrepreneurs. If their performance were theoretically perfect the role would not exist, and it cannot be completely specialized. Each performs some functions which could conceivably be compensated by wages, and normally furnishes property services which in theory have a rental value; and on the other side, neither hired laborers nor owners of leased property are ever entirely freed from responsible decisions and their uncertainties. Entrepreneurship, moreover, is not a "productive factor"; for it is not measurable, and is not applied in variable proportions in combination with the (roughly) measurable services.

The obvious question as to the conditions which determine the balance of gain or loss has in the abstract an obvious answer. For the individual entrepreneur, it depends on the accuracy of his judgment in forecasting, or guessing, i.e., on the predominance of favorable or unfavorable errors—or on "luck" as to contingencies that no one could be expected to foresee and take into account. (Error differs from ignorance, and neither can be objectively measured, or distinguished from luck.) For entrepreneurs as a class, gain or loss depends on whether on the average they err on the side of pessimism or of optimism. If the former is the case, they will bid up the prices of productive services to levels lower than the actual yield, and will make a gain; and conversely, if the errors average out on the optimistic side, profit will be negative on the whole. Both gambling psychology and statistical evidence point to the latter result, an excess of losses over gains as the share of pure-profit. Of course any one forecast made and acted upon may happen to turn out as accurate over some

interval, when the entrepreneur in question will "break even." It is wholly improbable that that would happen in an entire economy over a considerable period; and if it did, the accident would not indicate a theoretical state of equilibrium. A market organization cannot function perfectly on quasi-mechanistic principles; that is clear from Cournot's mathematical theory of equilibrium under "duopoly," and the "exposure" that later followed. Action on mutual prediction is impossible, apart from advance preconcerting, and would not be desirable; there could be no conversation if everyone knew beforehand what anyone else would say in response to any expression.

The next step in our construction might be to introduce organized entrepreneurship in place of individual, i.e., the partnership or corporation; but a brief survey may barely mention this logical stage. The internal relations of a firm are in much the same position as those of the family. From the standpoint of social policy, the main consequence of such group units is to increase the size of enterprises and reduce their number, making competition more imperfect and facilitating the establishment of monopoly. Economic analysis may treat the enterprise as an individual, as our laws largely do in the case of the corporation, and as realism dictates in that of the family. A common error in this connection is to overlook the ambiguity of ownership. The entrepreneur, individual or group, owns the enterprise, but *as entrepreneur* owns nothing real, neither productive capacity nor asset value, and in real life his ownership is often zero or a liability. This situation is familiar for the owners of corporate common stock; they would often gain by liquidation, but cannot act to bring this about.

The most important further complication to bring our structure nearer to reality is to introduce the purchase and sale of productive agents, as well as their services. The discussion may be restricted to tangible property, but must include all goods of appreciable durability. In the long view there are no really "primary" factors; both laborers and "natural agents" are in their economic aspects intermediate products, but the production of the former is largely independent of market calculation, and as they are not formally bought and sold, they may be treated as "given" (in a brief sketch such as the present), and consumables are capital goods until used up. This further step brings into market values capitalization with its time dimension, involving the rate of yield on investment—and also the lending of "money" at interest. (But we continue to abstract from effects of changes in its purchasing power.) In our modern economy, lending money is chiefly important in connection with corporate enterprise. A corporation exceptionally leases productive agents from owners (other than persons themselves, including salaried "managers"); the typical method of securing the use of property resources belonging to outsiders is to borrow money at interest and "create" the particular capital-goods wanted for use —or on occasion to buy them in the market. For many reasons, especially the provision of adequate security for debt incurred, this procedure is variously combined with the partnership principle, i.e., use of property initially owned by the responsible entrepreneurs. This is typically contributed in the form of money, the individuals receiving "stock," evidenced by certificates entitling them to specified shares in the gross profit, and in the assets of the firm in case of liquidation. Lenders of money receive evidence of both sorts of claims, most formally in "bonds." Intermediate securities and divers other forms of credit allowed by law may be ignored here.

Analytically essential is a two-fold specialization within the entrepreneurial function—which always combines final control with risk-taking—in contrast with furnishing productive capacity for "hire" under some arrangement. The two-fold specialization underlies the difference between two main contractual arrangements for hiring the use of property. As already explained (in the former paper) capital and its yield-rate have the same meaning in any economy, regardless of its scope or form of organization. A saver sacrifices some income, accumulated over a comparatively short period, and uses the released productive capacity to create a source of future income at some level for the indefinite future—in perpetuity unless he later "disinvests" to an equivalent extent which could never be determined accurately. Production is always instantaneous, resulting either in a product instantly consumed or in an immediate addition to capital. Production for the future (for consumption or investment) means, as just stated, production of an income, defined and

measured as a perpetuity. There is an anomaly here, in that capital creation counts as production and the capital as product, during the interval in which it occurs, and then its use to yield income also counts as production. In so far as production is a means to consumption as the end, this usage involves palpable double counting. The meaning of capital value is that anticipated future income. But it seems necessary for accounting, and anyway is so firmly established that nothing further need be said. (In income taxation, the doubling is more or less offset, in comparison with "earned" income, by property being considered to yield an income only after amortization—provision for perpetual maintenance in some form—while for personal earning power this is not allowed.)

A loan of money is *always* an alternative to a lease of assets of some kind, or to a sale of the yield of assets, and also to a sale of assets as such. Any loan could be replaced by a lease or by a sale, with an agreement for repurchase, and conversely. We may ignore borrowing for consumption, which is no real exception, and is comparatively unimportant. If the loan is a loan and not a gift, it is "secured" by earning assets—possibly personal earning power, which differs only in detail as to the enforcement allowed by the laws of a free society. Provision for possible changes in the value of the monetary unit is another detail; it is excluded here by the assumption of "neutral" money, but its effect is obvious, if the parties can and do exercise rational foresight. Interest is expressed as a rate percent (per annum) on a capital value, which, after an investment is made, is the estimated cost of producing an income source expected to afford the same net annual yield.

To clarify the two-fold specialization mentioned, and explain the difference between the loan and lease forms of contract, it is convenient to turn aside from the case of corporate borrowing and illustrate by a situation in which the alternativeness is more obvious because the choice is more familiar. An example at hand is a "farm" (here taken as "given") where it is more convenient to both parties for it to be operated by another than the (present) owner. The simplest arrangement is doubtless for the owner to lease the farm to the prospective operator. The alternative first in question is for the latter to borrow money and buy the farm, and so to pay interest instead of rent. (It is immaterial for the analysis whether the "farmer" borrows the money from the (previous) owner or from some third party, in a general loan market.) Other possibilities may be mentioned; the two parties could form a partnership, on any terms on which they could agree, for controlling operations and sharing the result—including the bearing of risk. Or, the owner might hire the operator and pay him wages, as in our type case of two Crusoes. (The institutions of free society exclude the alternative of the owner buying the operator and securing absolute control.) The essential point is that under "ideal" conditions of universal perfect foresight, economically rational behavior and perfect market competition, all the possible (or allowable) alternatives will lead to the same result as to the payment made by the user to the (previous) owner, or other division of the product between the two parties. The unknown in the expression for the rate of interest is the value of the farm; it is determined as explained above, the cost of creating an equivalent income source.

The immediate reason why the lease contract is sometimes adopted and sometimes the loan, is fairly obvious: the titular owner is the one who will gain or lose by future changes in the value of the property, and men differ in their forecasts in such matters, and in their attitudes toward speculative activity. But other considerations are involved. The future value will usually be affected by the use made of the property, or its treatment in use—presumably less favorably if the operator is not the titular owner. Of course some provision as to the use can be stipulated in a lease, or imposed by law (the issue is most important in farm tenantry, where a social interest is involved).[4]

There is no necessary connection between rent and natural agents; everyone is familiar with the leasing of property which no one would think of so classifying, e.g., automobiles and various productive equipment, even special consumption goods, such as evening clothes. (Nondurable goods could be leased only in the sense of an agreement for returning equivalent items

[4] In some respects, a dwelling might be a better example than a farm, as equally familiar and illustrative, while less tied up psychologically with the hoary idea that there is some general difference important for economic analysis between "land" and other productive agents. The main fallacies of both Marx and Henry George are simple deductions from Ricardian principles.

later.) Consideration of the effects of use "usually" makes it more economical for a person wishing the use of a "car" to borrow (or sacrifice other assets) and buy, rather than to lease; exceptions hardly call for notice here.

Corporate (or other entrepreneurial) borrowing involves an extension of the principles just stated, with an important difference. The lender "could" himself create the assets that the borrower will use the money to create, and lease, or sell, these to him as user. But the borrower usually wants the use of equipment, etc., especially designed for more or less novel uses, and their creation and use involve two distinct responsible decisions, those referred to before. One is the "commitment" of "fluid" productive capacity to some particular concrete form or forms—the second the use of the result to produce particular goods for sale in the market. In view of the differences between men in pertinent knowledge and attitudes—mainly toward responsible and hence speculative decisions and the risks they involve—it is usually mutually agreeable for both of these functions to be specialized in the same hands, while other persons furnish the fluid resources. That is, the parties usually agree on the terms of this arrangement more readily than on those of any alternative open. Both decisions are entrepreneurial and each is likely to involve a profit, gain or loss. First: when fluid capacity has been embodied in concrete agents, these may have a market value greater or less than their cost including interest paid. And secondly, the operations in which they are used may yield more or less than could have been secured through leasing them out, or selling them and lending the proceeds in the capital market. Both differences are profit—positive or negative, as always.

Some further discussion of the operation of an enterprise is in order, since it is in that connection that the prices both of products and of productive services are determined—ignoring for the moment the interest rate as a price, through which the sale value of a capital-good is determined, by "capitalization." Particularly in point are the "hire" of laborers and property items, wages and rent, both affecting profit. In effect, the entrepreneur acts as the *agent* at the same time of employees and property owners and of the consumers of the product. Full analysis is the task of a treatise on the elementary principles of economics, i.e., on the working of a free-enterprise economy. The main conclusion of such a study is that, in so far as men have effective foresight and behave individually ("competitively") with economic rationality, all resources are used in the way that yields maximum satisfaction of consumers' demand, as freely expressed in the market, and the product is distributed by giving each unit of productive resource the net addition its use contributes to the total product of the economy. Owners receive this in purchasing power, to be freely converted into consumption goods yielding maximum satisfaction, or saved and invested. Of course the "mechanism" works more or less imperfectly in many respects, which cannot be considered in detail here—though far less imperfectly than "radical" critics allege. And, again, the ethics of this principle of distribution are of course open to objection, and clearly limited in validity. For many reasons the system could not possibly work in strict accord with "theory," and in our society its operation is sweepingly modified, by charity and by law, intelligent or stupid, as the case may be.

More needs to be said about the agency relation, which pervades modern society in most spheres; in fact it is practically the main essence of a free social order, in politics and economics and quite generally. This is an inevitable consequence of specialization, especially of knowledge (a human being cannot know everything) which is the main source of the vast increase in efficiency achieved by modern science and technology. A convenient illustration is the relation between a patient and his doctor. An agent necessarily has more or less power—in this case power of "life and death," limited only by the patient's power to select his doctor and to dismiss him at will, in favor of any alternative available and that he may prefer. It is delegated power, but the power delegated can never be accurately defined, and in general its limits can be enforced, in free association, only as stated. The doctor is formally an employee of the patient, but his function is to give "orders" to the latter, and his relation to the patient is in substance more like the converse one of the ordinary employer to his employee; the former also has power delegated in essentially the same way, though in reverse, by the employee's choice of employer and right to change at will, for any alternative open and deemed better. In either

case, the effective freedom is that of contract on both sides; on that of the one who delegates the function of giving him directions, it is that of choosing his "boss." The limitations are serious, since the choice can never be made very intelligently, even among the alternatives open. The patient would have to know medical science himself, to know whether he needs a doctor, and in addition intelligent selection would require knowing both the technical and the moral qualifications of the available candidates. And then there is the matter of means for buying; freedom is limited to choice between alternative ways of using power to satisfy a want. His situation also parallels that of the consumer as principal in relation to producers (entrepreneurs) as agents. Medical service is a commodity on the market, only somewhat especially difficult for the consumer to judge as to quality. Of course patients, or members of any economic group, are free within legal limits to organize and bargain collectively—i.e., monopolistically—or they can appeal to "the government," with arguments, and votes.

A problem for brief discussion (already mentioned) is the fixation of the interest rate in the market, viewed as a price, in terms of demand and supply. The commodity in question is free productive capacity or "liquid" capital, in contrast with capital goods, whose sale price is fixed by capitalization, as already explained. Considering only such a progressive society as our own, the important general fact is that, allowing for time to adjust to changed conditions, the usual normal-price analysis in terms of functions or curves, is not realistic or valid. On the side of demand, meaning for new capital, "other things" cannot be assumed to remain unchanged as accumulation and investment proceed. Men regularly invest in every conceivable type of productive asset, tangible and intangible—not only in tools and materials but specifically in science and technology, as well as both "natural resources" (discovery and development) and in human beings as productive agents—not to mention creation of demand and other forms of good-will or going-value. In consequence, an increase in the supply may tend on balance either to lower or to raise the general yield rate. Historically, we find fluctuations but no demonstrable trend in either direction over long periods. On the other side, equally clear reasoning invalidates the notion of a supply curve for capital. New supply again violates a basic feature of given conditions, particularly in making saving easier by adding to income. This opposes any tendency to "diminishing returns" that might exist, or enhances the opposite tendency, and again the direction of the total effect is unpredictable. Further, the psychology of saving is so obscure that no one can say whether a higher yield tends to increase or decrease it, as a rate in time. And in any case, only the rate of growth of the supply can be affected by more or less saving, and since new saving is added to the whole past accumulation, the yield rate could be affected either way only after a considerable lapse of time.

The usual meaning of a normal or equilibrium price is that at which supply would be stationary, assuming a stable demand. But no one can say at what rate of yield people in general would stop net saving, or whether they ever would, or if so, would then begin to consume capital previously invested. Nor can anyone predict that some spectacular event will not open up new channels of profitable investment, or destroy important old ones. Incidentally, it is practically impossible to imagine, in the world as it is, economic conditions under which the yield would be zero, there being no possibility of investing to yield some net return; the opportunities seem literally inexhaustible. (Of course it is easy to describe such a state of affairs, mathematically or in words.) Three general statements about the yield rate seem worth making. One is that at any time the theoretical equilibrium rate is the prospective yield on new investment in the economy as a whole, and this has been fairly stable. Secondly, the major causes producing significant change in the market rate over moderate periods of time arise out of speculative conditions, especially in consequence of monetary changes or changes in monetary "psychology." Finally, with respect to long periods, changes are unpredictable, depending on the relative importance of new fields of investment opening up and saturation or disappearance of existing fields. Both discovery and invention and social psychology are cultural phenomena; they belong to history and lie outside the special field of economic analysis, beyond the reach of its concepts and methods. As far as known, after long efforts to discover simple historical laws or causal laws there are none of value for predic-

tion. Most historical changes do not tend to "equilibrate" and cease; nor do they conform to rules such as describe cause-and-effect or means-and-end relations in nature, or in those human affairs where motives work *somewhat* on the analogy of mechanical forces. They are of the nature of "fashion" or, in the long view, depend on vague "historical forces." Explanatory relations of some satisfying power can be discovered (or imagined?) afterwards, but they hardly enable prediction in advance. This is true even of biological evolution. Demographic changes are some exception—in so far as biological purposiveness is not offset by psychology. In most matters measurement is impossible, though statistical projection and estimation, often using related variables as indicators, may have some reliability for the near future in which other things may be reasonably assumed approximately equal. The methods of such a historically predictive natural science as astronomy have extremely little application; and when a number of "exogenous" causes operate together there is no recourse to simple principles of the composition and resolution of forces. Decisions of policy call for judgment based on wide experience much more than for scientific (mathematical) manipulation of recorded data, and at best the combination is extremely fallible. Economic phenomena, I repeat, are not sensorily empirical, and the limitations of "scientific method" must be stressed.

In conclusion: a study of method in any field ought to say something about the relation between knowledge and the corresponding technique or art—the use of results. Primarily, "pure" economics, or what is distinctively economic, depicts one main set of relations in strictly individualistic association, those of free co-operation by individuals in the instrumentally rational use of given means to achieve given ends. An ideally competitive market is practically the only setting of complete mutual freedom; there no one has arbitrary power over another, since each has equally good opportunities among which to choose. Its principles are independent of what concrete means are used, or to achieve what ends, or by what technology. However, much of the abstract theory applies to a dictatorship, to any society in which economic choices are made; for instrumentally rational decisions conform to the same principles, regardless of who makes them or for whom. But the principles of policy differ radically, chiefly because social action, being compulsory, violates the basic condition of individual freedom. Economics shows where the problems lie, but action for their solution belongs to the different realms of morals and law-and-politics and comes under different principles. Politically, in so far as a society cherishes freedom, it faces three major tasks: first, to decide who are to be politically free, to be citizens; freedom has no meaning for infants or helpless dependents, and many others cannot be trusted with it. In any case, it is freedom to use power, and without power is empty. Secondly, society must define the allowable freedoms, by distinction from conduct that must be regulated by law and authority. And thirdly, it must fix the details of the politico-legal order. Freedom must be limited, first, negatively, to keep it mutual by preventing predatory conduct, force and fraud; secondly, government should perform such necessary positive tasks as will not be performed through voluntary association, or will be performed enough better by compulsory agencies to justify the infringement on freedom.

As a final word, a technical observation about "welfare economics" may be added. The concept covers practically all economics bearing on issues of policy, and practically all these involve comparisons of the "welfare" of different people; for nearly any action will benefit some and injure others. And further—a very last word—there are social values that cannot be realistically dealt with or discussed in terms of individual interests; a society acts for the future, not merely in the interests of its living members, but for its own future as a society, and the future of civilization in the world.

THE EFFECTS OF A CUSTOMS UNION IN WESTERN EUROPE*

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A popular interpretation of the gains from free trade in Western Europe is based on a misleading analogy with American mass production. The standardization to which Americans are accustomed is much less characteristic of production in Europe. Even within its own national markets, Europe has failed to develop the habit of mass consumption. Producers cater to class distinctions which fragment the home market, while their export demand is heterogeneous and uncertain. There have been too many models, too many styles, and too many firms. As a result, plants are not of optimal size in relation to the total volume of national production. A mere aggregation of European markets, each with its own habits of consumption and methods of distribution, does not offer the same opportunity for mass production as does the more homogeneous American market.

These considerations have led some to conclude that the expected economies of scale resulting from free European trade are likely to prove illusory.[1] Why should we expect great gains from an aggregate of diverse national markets when the home market offers unexploited opportunity for economies of scale? Before advancing reasons for a somewhat more hopeful view, it is convenient to develop, first, the effects of increased competition.

Increased Competition

Quite apart from restrictions on foreign competition, the evidence is that domestic competition in Europe has been restrained and ineffective. Government policy, market organization and the small family firm "all seem to conspire to perpetuate the existence and inefficiency of the marginal firm."[2]

The costs of firms in the same industry in the same country show a wider range than would appear to be justified by the dynamics of growth. Some reasons advanced to explain this phenomenon are the lack of market research before building new plant, investment in expectation of future growth, continued operation of small family firms despite losses, technical indivisibility in the case of small countries and, of course, cartel agreements, market allocations, price compensation schemes and subsidies which keep the high cost producer in business. The evidence suggests that the less efficient survive even though the more efficient are plagued with overcapacity.[3]

While oligopolistic output and pricing are common policies, European countries show wide contrasts in that important but neglected factor of production which Meade calls the "economic climate." Where the spirit of competition is alive, there is little doubt that free trade will lower prices and concentrate production in the more efficient firms, or will force others to adopt better methods. Where silent collusion has been the rule, the wider market will increase the number of oligopolists and offer a much larger prize to a firm which risks competing for a larger share of the market.

An important corollary of the wide spread in the costs between firms within the same country is that the shift of industry between countries will probably be less than would appear from the present volume of foreign trade over existing tariffs, while the reallocation of resources between firms serving the domestic markets will be correspondingly greater. This suggests a parallel in earlier American history. Just as the spread in costs between our North and South shifted the textile industry to the American South instead of to some foreign country, so European industry is likely to shift within the nation rather than between nations. European governments will have to allow more

* This paper was presented at the 1958 annual meeting of the Southern Economic Association.

[1] Notably Harry G. Johnson, "Criteria of Economic Advantage," *Bulletin of the Oxford University Institute of Statistics*, February 1957, p. 35.

[2] Tibor Scitovsky, *Economic Theory and Western European Integration*, (London: Allen & Unwin, 1958), p. 39.

[3] Scitovsky *op. cit.* p. 11. His impressions are based on some of the studies of European productivity and on discussions with officials concerned with the question.

domestic competition if the larger and more efficient firms are to survive the threat of foreign competition under free trade. In sum, the potential gains from competition are substantial because of restrictions on domestic competition which have been condoned by private practice and sanctioned by public policy.

Without government support, private regulation is more difficult to perpetuate and the larger firms are likely to encroach on the markets of the less efficient. Politically the hand of government will be strengthened where it wishes to resist the pressure of its own special interest groups. Moreover, free trade within the larger European community may force governments to abandon discriminatory taxes and other equalization schemes which favor the high cost firm. In short, we may expect that free trade will be a leveling influence which not only reduces the spread between costs of domestic firms, but also tends to bring about more uniform policies between the members of the European community. At the worst, increased competition within international cartels offers some of the advantages of competition with respect to size and productivity.

Scitovsky believes that the major gains from free trade in Europe will result from increased competition rather than from an increase of international trade.

> The most successful institutions are likely to be imitated in the countries that do not yet have them; the better industrial and commercial practices are likely to displace inferior ones; and the behavior and habits of thought of the more ambitious, more imaginative, more pushing and more ruthless are likely to prevail and be adopted also by their more easy-going competitors. That there is much unexploited scope for such development must be apparent to anyone who has travelled in Europe...[4]

Economies of Scale

A common European market does make possible large scale production and variety of consumer choice. But, by itself, free trade may not offer sufficient inducement to attract new investment in plants of optimal size. The decision to shift from suboptimal to optimal size plants will be influenced more by the increment of growth in demand which the firm can expect than by the dimension of the market per se. There will be more firms as well as more consumers. The key lies in growth and in market shares, since the problem facing the firm is to expand its own market rapidly enough to warrant investment in larger plants. A large but stagnant market, served by many suboptimal plants, may fail to induce investment in plants of optimum scale.

In an industry of many small firms, where existing investment in suboptimal plants is profitable, the shift to large scale operations may call for spacing the building of new plants with a gap of several years. The danger here is that a competitor will jump the gun and install new suboptimal equipment, if the firm waits for sufficient growth of demand to justify new investment of optimal scale. At the same time, if the firm builds now in anticipation of future growth, it will have to cut profit margins and seek a larger share of the market or be prepared to carry on with excess capacity for some time.

The outlook appears more favorable where a dominant firm's share of the market is large enough that its increment of growth plus obsolescence on old plant will justify the leap to investment of optimal size. On the other hand, in an oligopolistic industry with comfortable profit margins, the problem is a serious one, for if the firm has to seek a larger share of the market, the prospect of lower profit margins for all may discourage the venture.

The interpretation suggested here is that, in the past, domestic competition which seriously encroached on a competitor's market has been limited and, second, that until recently at least, the increment of growth did not appear to justify new investment in optimal size plants. With the rapid growth experienced in recent years, one suspects that the outlook is already favorable. Certainly, the prospect for development of mass production industries is more favorable, if we consider all the relevant factors rather than the effect of free trade alone.

There are at least four sources of uneven rates of growth which may accelerate expansion of demand for the products of some industries.

The first is changes in the pattern of consumer demand. European income has reached a level where demand for consumers' durable goods and new products will expand at rates sharply disproportional to the growth of staples. Independently of the effects of free trade, the OEEC

[4] *Op. cit.*, p. 23.

estimated that, under favorable conditions, consumer durable goods expenditures would rise one-third in five years and expenditures on automobiles would rise two-thirds in the same period compared with a five percent rise in expenditures on necessities.

Second, growth of consumer durable goods industries can be stimulated by development of instalment credit. The institution is already well established in Great Britain and Germany. Its further spread and development would undoubtedly accelerate the growth of consumer durable goods industries. Furthermore, consumer credit contributes to uneven growth to the extent that extensions of new credit are directed at the durable goods field, while repayments impair current expenditures across the board. In any event, American experience shows that outstanding instalment credit can cumulate into a very impressive figure over rather a long period.[8]

Third, we may expect the more efficient firms to expand faster than the industry as a whole due to increased competition and changes in public policy.

Fourth, we may have some reallocation of investment between countries, at least in respect of the increment of growth. Tariff discrimination against the outside world, that is, the trade diversion effect, will further encourage growth within the customs union. This may be especially important in keeping American exports of consumer durable goods out of the European market.

The opportunities of the wider market and the discrimination against American exports are attracting American capital and management to establish branch plants and to buy into established firms in the European community. Presumably, this is favorable to both increased competition and economies of scale.

It will be observed that some of these influences are already in train. Combined with the disproportions of the income effect and the stimulation of consumer credit, free trade, increased competition and the advantage of large scale production become mutually reinforcing factors with multiplier effects. With lower prices from competition and economies of scale, habits of consumption may turn out to be less rigid and demand more price-elastic than European producers have supposed.

Within this moderately hopeful view of the dynamics of the overall effects, I must turn now to a somewhat more gloomy view, based on static analysis of the trade creation and trade diversion effects of a customs union.

TRADE CREATION VERSUS TRADE DIVERSION

Figure 1: A Special Case

We begin with a special case in which the domestic supply of a small importing country is subject to increasing cost while the export supply of two large countries with extensive world markets is infinitely elastic with respect to the import demand of the small country. This special case shows quite simply the basic customs union problem which will be treated later in the more general case where all three sources of supply are subject to increasing cost.

In both Figures 1 and 2, S and D are the respective supply and demand curves of the importing country, which is called the home country. The export supply of the partner in the customs union is X_p excluding duty and X_p' including duty. The export supply of the nonmember, called the outside country, is X_o excluding duty and X_o' including duty.

Under free trade, home country demand is supplied entirely by imports from the outside country, the cheapest source, at the international

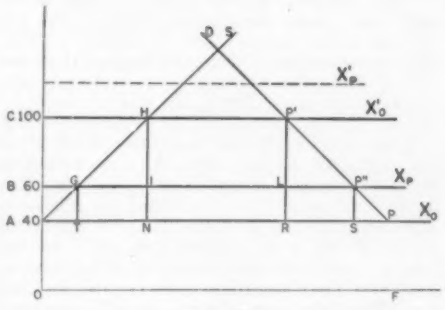

Figure 1

[8] For an account of the stimulating effect of consumer credit in connection with growth, see Erwin Miller, "Consumer Credit and Economic Growth," *Consumer Installment Credit*, Part II, Vol. 1 (Washington, D. C.: Federal Reserve Board, 1957), pp. 169–219. The possibility that instalment credit may encourage expenditures on consumers durables at the expense of other expenditures is alluded to in my essay in the same volume, "Instalment Credit and Business Cycles," pp. 43–44. For a brief study which includes German institutions and statistics, see Frederich A. Lutz, *Der Konsumentenkredit*, Köln-Berlin, 1954.

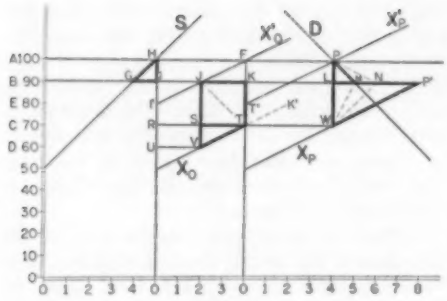

Figure 2

equilibrium price of OA or \$40 per unit. When a specific duty of \$60 is imposed on imports from all sources, the home price rises by the full amount of the duty to OC. With infinitely elastic export supply, there is no terms of trade effect.

The tariff has three effects: 1. The consumption effect, triangle $P'PR$, which is determined by the slope of the demand curve and the amount of the tariff. 2. The production effect, triangle HNA, which is determined by the slope of the domestic supply curve and the amount of the tariff. 3. The revenue effect, rectangle $HP'RN$, which is determined by the surviving volume of imports and the amount of the tariff.[6]

The amount of trade destroyed is the sum of the production-expanding effect, AN, plus the consumption-contracting effect, RP. The extra cost of producing protected output at home, compared with the cost of importing it, is the production cost of protection. The consumption cost is the distortion of the pattern of consumption due to the higher price. Although the cost of the marginal unit of protected output is higher than the cost of imports by \$60, the full amount of the tariff, the average cost of protected output is higher than the cost of imports by \$30, which equals half the tariff. With linear curves, the loss per unit of protected output is equal to half the duty.

Effects of a Customs Union

The stage is now set to deal with a customs union which creates free trade between partners, but retains the full duty on imports from outside the union. The effect of the \$60 preferential tariff reduction shown in Figure 1 is, in part, the same as a general tariff reduction by a smaller amount (in this case \$40), but in part is quite different.

New trade is created between partners corresponding to the production-contracting and consumption-expanding effects of the \$40 decline in price from OC to OB. The amount of trade creation, $GI + LP''$, defined to include both production and consumption effects, is exactly the same as if the duty had been reduced by \$40 on imports from both sources. The gain per unit of trade created is the average reduction in cost on the amount of trade created, or half the fall in price. The amount of trade created is determined by the slope of S and D; the gain is the sum of the two slopes (for this purpose, demand is defined to have a positive slope) times half the fall in price. The gain will be greater, the more sensitive are the home country's supply and demand to price and the greater the fall in price.

The harmful effect of the customs union is the complete destruction of outside trade in the amount of HP'', as home demand is diverted to duty-free partner imports. This aspect of the preferential tariff removal is altogether different from a uniform tariff reduction of \$40. The amount of trade diverted depends entirely on the volume of outside imports which survived the initial tariff and is not of general interest in this special case. The loss per unit of trade diversion is the full increase in cost from P to P'' which is the difference between the partner and outside country's supply price. The loss from trade diversion is equal to the revenue of the initial tariff minus that part of the revenue which is redistributed to consumers by the fall in price from P' to P'' ($HP'RN - HP'LI = ILRN$).

Figure 2: Increasing Costs

The obvious fact that nations typically import the same or very similar products from

[6] The consumers' surplus before the tariff is the entire area under the demand curve to the left of P minus the cost, i.e., DPFO − APFO = DPA. The corresponding consumers' surplus after the tariff is DP'C. The difference between the two consumers' surpluses is CP'PA, the loss to consumers due to the tariff. Part of this loss is now collected in customs revenue, HP'RN. Another part, ACH, is the producers' surplus which is a redistribution of income from consumers to producers. This leaves AHN and P'PR. The first is the extra cost of producing output at home instead of importing it; the second is the consumption cost from distorting the pattern of consumption. For a detailed analysis of the effects of protection see W. M. Corden, "The Calculation of the Costs of Protection," *Economic Record*, April 1957, pp. 29–51.

different sources implies that export supply curves generally slope up to the right. This is shown in Figure 2, with separate grids for each of the three supply curves, it being understood that home country demand, D refers to supply from all three sources. The symbols in Figure 2 are the same as in Figure 1.

A more elegant diagram might aggregate supply, by adding the abscissae corresponding to each price ordinate and show three supply curves (S), ($S + X_a$) and ($S + X_a + X_p$).[7] The graphic analysis is much easier to follow, however, if the three supply curves are shown separately, as in Figure 2.[8]

With a uniform duty of \$30, AC, home demand of AP is satisfied by home production of AH plus outside imports of HF plus partner imports of FP. The outside and partner country price is OC or \$70. The revenue is $HPWR$.

When the customs union removes the \$30 duty on partner imports, the home price falls to \$90 and the partner price rises to \$90. The sum of these two price changes must equal the tariff. Since the full duty is retained on outside imports, the outside price falls to \$60 because the home and outside price must fall by the same amount (or until outside trade is completely destroyed).[9]

[7] For such a treatment, see Harry G. Johnson, "Discriminatory Tariff Reduction: A Marshallian Analysis," *Indian Journal of Economics*, June 1957, pp. 39–47. The present analysis follows Johnson closely, but gives more attention to price effects and policy implications.

[8] Although the diagram is designed to show the effects of a custom union starting from a protected home country price of \$100, where the demand curve crosses the partner's export supply curve, X'_p, including duty, it may be helpful to indicate the earlier step, when a specific tariff of \$30 was imposed on imports from both sources. The free trade equilibrium price would be \$80 where D, home demand, crosses X_p, the partner export supply excluding duty. The additional supply, T^1K^1, along the dotted line extending X_a equals the supply gap on the home country grid. When a specific duty of \$30 per unit is initially imposed on imports from both sources, the home price rises from \$80 to \$100 while the foreign and partner prices each fall from \$80 to \$70. The import terms of trade effect is now introduced.

[9] The effects on price and, hence, on trade are less than the height of the duty might imply. Assuming the same internal price-sensitivity in each country, the fall in home country price in a three-country model must equal one-third of the tariff reduction because partner exports must expand to match the adjustment in both other countries.

Trade between partners is created in the amount of LN equal to the consumption-expanding effect, LM, plus production-contracting effect, GI. Outside trade is diverted in the amount of JK equal to the further expansion of partner exports by NP'. Although inelegant, the gadget at the extreme right of the diagram has the merit of showing the change in partner export supply corresponding to contraction of home supply and destruction of outside imports ($MP' = GI + JK$). Expansion of partner exports beyond the intersection of D and BP' fills the gaps GI and JK.

Gains from Trade Creation

We are now ready to tackle the significant issues created by a customs union. The amount of trade creation is given by the sum of the slopes of home supply and demand, just as in Figure 1. But in this case the amount of trade diversion is given by the slope of outside exports, X_a.

The home country gains from trade creation are the consumption effect, PML, and production effect, HIG, which amount to half the fall in price times the contraction of production and expansion of consumption ($PNL = \frac{1}{2}AB.\ LN$).

The corresponding partner gains are half the partner price *rise*, CB, times the amount of trade creation ($LNW = \frac{1}{2}BC.\ LN$). Since the tariff is the sum of the two price changes, the partners' joint gain, which is an index of increase in world welfare, is half the tariff times the amount of trade creation ($\frac{1}{2}AC.\ LN$). The partners share this gain in the proportion that the price changes in each country relative to the duty. Their joint gain per unit of trade creation must equal half the tariff.

Losses from Trade Diversion

Since the amount of trade diversion is given by the slope of outside export supply, X_a, the outside country loss is half the fall in price, CD, times the amount of diversion ($STV = \frac{1}{2}\ CD.\ ST$).

The home country loss from trade diversion is $JKTS$, since the loss per unit is the full rise in partner price, that is, the additional cost of imports as a result of the customs union.

The partner's gain from trade diversion, $NP'W$, is equal to half of the home country's

loss or half of the rise in partner price times the amount of trade diverted ($NP'W = JKT$).

Now for a bit of geometrical juggling: The joint loss of the two partners is the home country loss minus the partner country gain ($JKTS - JKT = JTS$). To this must be added the outside country loss, STV, in order to obtain the world loss from trade diversion. Triangle JTV, the world loss, is half the tariff times the amount of trade diversion ($JTV = \frac{1}{2}BD.ST$).

Gains vs. Losses

Based on the aggregate welfare function used here, the net effect of trade creation versus trade diversion is PNW compared with JTV. Since both the world gain per unit of trade creation and world loss per unit of trade diversion are each equal to half the tariff, the sign of the aggregate effect on world welfare does not depend on the height of the duty. The net effect of a customs union is determined simply by whether the amount of trade creation is $\gtrless$ the amount of trade diversion, that is, by LN compared with JK. And this, in turn, depends on whether the sum of the slopes of the home country's supply and demand is $\gtrless$ the slope of the outside country's export supply, that is, on whether domestic demand and supply are more sensitive to price in the home country or in the outside country.

The more sensitive the exporting partner's supply and demand are to price, the greater will be both the trade creation and trade diversion effects. But this cannot change the sign of the aggregate index of world welfare.

The Fourth Country Adjustment

In Figure 2, both export supply curves have been shown flatter than the home country's supply curve on the assumption that domestic supply and demand in each of the three countries are equally sensitive to price. On this assumption, the amount of trade creation exactly equals the amount of trade diversion in a three-country model, and the entire adjustment implied in Figure 2 takes place via domestic supply and demand in each of three countries.

But if the first outside country can divert its exports to other markets outside the customs union, its export supply to the home country will be more sensitive to price than is the home country's import demand, even though domestic supply and demand in each country are equally price-sensitive. This seems to support Viner's original gloomy view of a customs union, unless the union is a very large one. For if the export supply of the outside world is more price-sensitive than the import demand of the customs union, the net effect on world welfare is harmful under the assumptions of our model.[10]

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[10] The analysis above carries out Professor Viner's pioneering work. Reference to his early treatment may be of interest. Viner's celebrated strictures against preferential tariffs in *The Customs Union Issue* (London: Stevens & Sons, 1950), were foreshadowed by his 1931 essay on "The Most Favored Nation Clause" (*Index*, VI, January 1931; republished in Viner's *International Economics*, (London: Allen & Unwin, 1951), p. 97). Here he argued that a high but uniform tariff may divert trade much less than a moderate duty which discriminates between imports according to source. Preferential tariff reduction "operates as a deterrent instead of a stimulus to the optimum allocation of the world's resources in production."

After reviewing Viner's case, Haberler concluded that "Viner's reasoning has a very limited application owing to his assumption that A itself would not produce the commodity even under a high import duty.....The argument would be only quantitatively and not qualitatively different were one to urge that Free Trade upon the Earth is harmful because trade would follow quite different channels if exchanges of goods took place with the planet Mars." (*The Theory of International Trade with its Application to Commercial Policy* [New York: Macmillan Company, 1937], n. 8, p. 386.)

Although, holding that general tariff reduction is preferable, Haberler's early work sanctioned preferential treatment as better than "no reduction whatever in duties." His supporting argument was that "The same effects upon the volume of trade and the international division of labour could clearly be achieved through a general reduction in duties by a smaller amount...." (*Op. cit.* p. 387.) This view is correct only in respect of the production and consumption effects in the home country. As Figure 2 shows, preferential treatment causes the partner to over-export and the outside country to under-export, as compared with a smaller but uniform reduction in duty. As a result, the pattern of consumption and production is distorted in both countries.

Although Viner's treatment did not bring the consumption effect formally into account and tends to assume constant costs, his insight was the correct one. However, any general presumption against customs unions is no stronger than the reasons for supposing that exports are more responsive than imports to changes in price. Thus, the case depends on how many countries remain outside the customs union.

Terms of Trade

Since the partner price moves up while the outside world price moves down, there are two terms of trade effects, one on the original volume of partner imports and the other on the surviving volume of imports from the outside world.

The partner's gain on the terms of trade, which is part of the loss of revenue to the home country, is *KLWT*, the product of the original volume of partner imports and the increase in partner price. This will be larger, the more insensitive to price is the partner export supply and the larger the original volume of partner trade.

The revenue on outside imports is now *IJVU*. The outside country's loss on terms of trade, which is a gain to the home country, is *RSVU*, the product of the surviving volume of outside imports times the fall in outside country price. This will be larger, the more insensitive to price is outside export supply and the larger the original volume of outside trade.

Monopolistic Effects

We may speculate briefly about certain implications of this model for the present European common market. If, as is commonly believed, American markets are more price-sensitive than European markets, trade diversion would exceed trade creation on those commodities imported by the customs union from both partner and American sources, provided that export pricing is competitive.

Without formal analysis we might guess that exports of monopolistic industries may be less price-sensitive than those of competitive industries. The reason is that the lower prices inflicted on outside exports by tariff discrimination will not spoil the exporter's home market. Within the limits imposed by marginal cost, there may be less trade diversion of the exports of outside monopolistic industries than is implied by a competitive model. Preferential tariff reduction amounts to an increase in the duty on outside exports, a monopolistic device by which partners may secure more favorable terms of trade from outside monopolists.

One relevant generalization shown by the competitive model is that the world as a whole (as well as the member countries), is more likely to gain, the greater the damage inflicted on the outside world, that is, the less sensitive are outside exports to price.[11]

The model shows that nothing happens if the partner export supply is insensitive to price, except that the exporter gains, via the terms of trade, the revenue now collected by the importing country.[12] Since the partner gain from trade expansion is only half as much per unit as the terms of trade gain on the original volume of exports, this points to a real danger, unless domestic competition inside the customs union is increased. But this is an issue between partners and does not affect the outside world, since inflexible partner export supply is equally unfavorable to trade diversion and trade creation.

In any event, tariff reduction has less effect under monopolistic than under competitive conditions, because the difference in social costs between countries is less than the duty.

Some Indirect Effects[13]

Partial equilibrium analysis in international trade is defective owing to the *ceteris paribus* assumption. Factor prices, prices of other goods and money incomes are assumed to remain constant. The analysis fails to bring into account the indirect effect of tariff changes on the cost of other goods and all cross effects through demand.[14]

On the supply side, tariffs on materials and parts raise the costs of the consuming industry and, thus, may affect foreign trade. If the con-

[11] This is noted by Harry G. Johnson, *op. cit.*, see also his "Marshallian Analysis of Discriminatory Tariff Reduction: An Extension," *Indian Journal of Economics*, October 1958, pp. 177–181. The same principles hold in this three-country analysis in which the outside country imports from the partner.

[12] F. W. Taussig made a similar objection to preferential duties in "Reciprocity," *Quarterly Journal of Economics*, October 1892.

[13] No attempt is made here to deal with changes in exchange rates that may be needed if some partners are initially more highly protected than others. The importance of this possibility is mitigated to the extent that exports as well as imports increase for each partner.

[14] In special cases, a trade diverting customs union may increase world welfare and, conversely, a trade creating customs union may decrease world welfare. For general equilibrium analysis, see R. G. Lipsey, "The Theory of Customs Unions: Trade Diversion and Welfare," *Economica*, XXIV (1957), pp. 40–46; "Mr. Gehrels on Customs Unions," *Review of Economic Studies*, XXIV (1956–57).

suming industry is import-competing, tariffs which raise its costs will indirectly tend to increase imports. In case of export-producing industries, higher costs will indirectly tend to reduce exports. A customs union will lower such indirect taxes and thus reduce the costs of industries which consume protected goods. As a result, both import-competing and exporting-producing industries will become more competitive in world markets. Thus, removal of tariffs on materials and parts tends both to increase exports and to reduce imports. These indirect effects will be greater, the greater the initial revenue effect of the tariff and the greater the fall in home price when duties are removed.

Partial equilibrium analysis overstates the effects of tariffs by neglecting their effect on factor prices and the export terms of trade. Expansion of a country's exports may encounter diminishing physical returns owing to limitations on resources and adverse terms of trade owing to the effect of increased exports on world prices. For both reasons, the cost of protection and, hence, the gain from tariff reduction is overstated. Changes in the average costs of imports give an incomplete picture, since changes in factor costs may shift the supply curves. When the quantity of imports which can be obtained per unit of factor input in the export industries does not remain constant, partial equilibrium analysis overstates the cost of protection and, hence, the effects of tariff reduction.

The more serious limitation is that large price changes on many items may shift demand and supply curves a bit.

Meade's Criteria

In conclusion, we compare our findings with those of Professor Meade, who has contributed so much to a better understanding of the customs union problem. Unlike our simple model, Meade deals with a wide variety of special cases. His treatment covers both partial and total elimination of particular duties on partner trade while our comment deals only with the latter case.

According to the criteria with which Meade sums up his findings in *Trade and Welfare*,[18] there is more likely to be a net increase in the economic welfare of the world:

One: If initial duties are high on trade between member countries.

Two: If the elasticity of member countries' import demand is very high, provided this is due to trade creation rather than trade diversion.

Three: If the elasticity of member countries' export supply is very high, provided this is due to trade creation rather than trade diversion.

Four: If initial duties are low on imports from the outside world.

Five: If the partners are the principal suppliers of trade between member countries.

Six: If outside countries' elasticity of import demand and export supply is low in respect to the commodities subject to preferential tariff reduction.

Now each of these conditions does not independently favor an increase of welfare, and it is a little difficult to imagine that all six will often be satisfied. For example, high initial duties and elastic partner exports, favor a *decrease* of welfare, if the net effect of other conditions is negative. On the other hand, the entire set of criteria, especially the principal supplier test and low initial duties on outside imports, are needlessly restrictive and represent a compounding of special cases.

To be sure, if initial duties discriminate against partners, as Criteria One and Four require, we may favor a customs union to the extent that preferential treatment of partners is needed to eliminate existing discrimination. But that would be a special case, indeed. Otherwise, the height of the initial tariff is indifferent as between trade diversion and trade creation, since price must fall equally in the importing partner and outside country except at the limit where outside trade is already destroyed.

The usefulness of the six criteria is further limited by the fact that they specify somewhat mutually incompatible conditions. For some special explanation is needed (e.g., transport costs)

[18] J. E. Meade, *Trade and Welfare* (Oxford: Oxford University Press, 1955), pp. 527–528. For the sake of brevity, I have greatly simplified Meade's statements without, I believe, changing their meaning. The similar criteria in *The Theory of Customs Unions* are, in some respects, less qualified and seem more vulnerable to criticism. In respect of Meade's seventh criterion for indirect effects, see n. 18. It is only fair to emphasize that these criteria were broadly designed to include other types of discriminatory tariff reduction as well as customs unions. My purpose is only to find more useful criteria and I regret any inadvertent unfairness that may arise because only the customs union case is considered here.

in order for partners to remain principal suppliers to each other (Criterion Five), if they have high initial duties and very high elasticities in respect of member country trade (Criteria One, Two and Three), but have low duties on outside imports and face low elasticities in outside countries (Criteria Four and Six). The principal supplier test is out of place here, because the volume of trade which can be created depends on how much trade was destroyed and not on how much has survived the initial tariff.

The attempt to combine criteria which are relevant to a variety of special cases does not seem successful. If we deal in special cases, very high initial duties and high price-sensitivity all around (i.e., the opposite of Criteria Four and Six) may be most favorable to a customs union because:

(i) less outside trade will have survived which is capable of being diverted and

(ii) more partner trade can be created where more has been destroyed.

In the limiting case, where all trade is destroyed, none can be diverted and the potential for trade creation is optimal between potentially complementary countries.

Meade's elasticity criteria dispose of the customs union problem in the premise, when we are told that highly elastic partner imports and exports favor increased welfare, provided that elasticity is due to trade creation rather than trade diversion. Except for indirect trade diversion, the proviso is redundant in respect of imports and misleading in respect of exports. For present purposes, no consistent bias is introduced by abstracting from indirect effects on substitute and complementary products, since they are subject to the same principles as direct effects of tariff reduction on the particular product.[16] Partner asymmetry becomes clear in case of independent goods which have no indirect effects. Elastic partner import demand is certain to increase welfare because the slope of the curve is determined solely by the domestic production-contracting, consumption-expanding effects (GI + LM) which are unaffected by substitution between sources of supply. But no similar rule is possible for the exporting partner because his elasticity does not favor trade creation over the import type of trade diversion in Figure 2, even with the stipulation that he exports only to a member country. Thus, even if partner exports expand only as he produces more and consumes less, the effect of *his* elasticity is indifferent as between trade creation and third country trade diversion.

Unfortunately, symmetrical treatment of partners also conceals the one issue most crucial to the customs union problem, namely, that exports are likely to be more elastic than imports, because only export elasticities are affected by direct trade diversion of the particular products on which duties are reduced. From the point of view of any single exporting country, elasticity is a function of the number of countries, but this consideration is irrelevant from the importing country's point of view.

After an extensive and illuminating exploration of a wide variety of cases, Meade's Dutch Lectures conclude that one can "start with some general prejudice in favour of a customs union" because some trade will be created.[17] In respect of price effects with which we are both concerned here, the point does not seem well taken.

Unless the customs union includes a major part of the trading world, any general presumption can only be that, because of trade diversion with second outside countries, export supply is typically more price-sensitive than import demand. This becomes a certainty for independent

[16] In the exporting partner country, trade creation raises the price which contracts exports of substitutes and imports of complements, but expands imports of substitutes and exports of complements. Conversely, for the importing partner, trade creation lowers price which expands exports of substitutes and imports of complements, but contracts imports of substitutes and exports of complements.

With respect to outside countries, positions are reversed because trade diversion lowers price in the exporting country and so has indirect effects similar to those of the importing partner; but trade diversion raises price in the outside importing country and so has indirect effects similar to those in the exporting partner country.

[17] J. E. Meade, *The Theory of Customs Unions* (Amsterdam: North-Holland Publishing Company, 1955), p. 107. Needless to say, this does not bring into account economies of scale and dynamic income effects.

Although the criteria set forth in Chapter VIII of these lectures are not entirely identical with those in *Trade and Welfare* (*op. cit.*), they are open to much the same criticism. For example, the Second, Third, Fourth and Fifth Criteria imply incompatible conditions while the Third and Fourth are open to the objections advanced above.

goods, unless the cards are stacked in favor of customs unions by assuming that *internal* supply and demand are more price-sensitive with respect to member country imports than with respect to outside country exports. In general, the count against customs union is no stronger than the case for believing that exports will be diverted to or from fourth markets.

But in the four-country case needed to tilt the scales against customs unions, primary trade diversion may be mitigated by secondary trade expansion. For if one partner initially imports from a third country and the other partner initially exports to a fourth country, formation of the customs union may easily divert partner exports *to* the customs union while third country exports are diverted *from* the customs union. In this case, the third country will be looking for markets while the fourth country is looking for goods. And as Meade notes, this is favorable to a deal.[18]

The conclusions which emerge have the advantage that each criterion is independently relevant to the customs union case and, therefore, more generally useful:

One: In three-country trade, the sign of the welfare effect depends simply on whether internal supply and demand are more price-sensitive in the importing partner or outside country.

Two: In four-country trade, negative welfare effects are more likely because (on the neutral assumption that internal supply and demand are equally price-sensitive in each country) direct trade diversion will exceed trade creation to the extent that either exporting country diverts exports to or from the second outside country. But if both exporting countries divert trade, the primary loss may be mitigated by secondary trade expansion between the two outside countries.

Three: The effect of a customs union will be greater, whether to increase or decrease world welfare,

(i) the higher the initial tariff and

(ii) the more price-sensitive are internal supply and demand in the exporting partner country.

But whether the net effect is positive or negative is not affected by either condition, except at the limit where outside trade is completely destroyed.

[18] Although it is often forgotten, the gains from trade creation are not measured by the volume of trade expansion. *Trade and Welfare* (p. 528) says a net increase in economic welfare from secondary effects is more likely, if duties are high on trade between countries in the outside world in respect of the commodities subject to preferential tariff reduction. But *The Theory of Customs Unions* (p. 109) concludes the opposite: a customs union "is more likely to raise economic welfare, the lower the rate of import duties in the rest of the world but the greater the number of the independent customs unions." The difficulty seems to be that low duties in the outside world permit a greater volume of secondary trade expansion, but high duties produce greater gains per unit of additional trade.

FOOD CONSTRAINTS ON INDUSTRIAL DEVELOPMENT IN POOR COUNTRIES*

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The governments of most underdeveloped countries—rightly or wrongly—aspire to increased industrialization. And not a few economists who identify industry with development have recommended various means to expedite production of other than primary goods. One frequently advanced argument is that, for one or more reasons, urban wages are too "high" and that this "justifies" protection of industrial output from cheaper imports. However, especially in some of the really poor and overpopulated countries of Asia, industrialization has been so slow as to suggest that some other and perhaps more serious constraint is operating. And, when one considers their poverty and hunger, one is reminded of the classical opinion that an increasing food supply is a precondition of industrial growth.[1]

HIGH WAGES IN URBAN INDUSTRY

A common observation regarding some underdeveloped and overpopulated countries is that industrial wages are unduly "high." The average productivity of urban labor, compared with wages and outputs in rural occupations, is allegedly insufficient to justify prevailing urban wages. Various reasons have been suggested. Among these are minimum wage laws, passed in emulation of advanced countries, and organization of urban labor by unions. The higher costs of living in cities are often mentioned. The paucity of reliable and skillful workers, more often needed in industry than agriculture, is cited. But whatever the cause of the alleged disparity in real and money labor costs, as between town and country, it is often held that its effects should be offset by protection of domestic industry against imports.

Professor Hagen has recently made such an argument.[2] His main concern is with growing economies in which supposedly there should be a steady transfer of labor from rural agriculture to urban industry. In this dynamic situation, it is claimed that much higher wages for equivalent workers and jobs are and must be paid in industry in order to overcome various inertias that seem to inhibit internal migration. So, taking "apples" to represent agriculture, and "suits" to represent industry, he considers cases where the internal apple to suit exchange rate is greater than the economy's transformation ratio.

For brevity's sake we shall examine only his case of labor as the sole factor. Fig. 1 here, with certain additions and subtractions, is Professor Hagen's Fig. 1. AM is the transformation curve between apples (Y axis) and suits (X axis), AP_e the external exchange ratio based on world prices, and AP_i the internal market exchange ratio.

If AP_i were coincident with AM, one would expect this country to produce only suits at M, because AM is flatter than AP_e: it could then trade its way at world prices to Y on I_3. Or, if external trade is for some reason impossible, one would hope and expect it to attain X on I_4. However, if AM and AP_i are not coincident, enterpreneurs will react to AP_i and disregard AM. Then the economy will produce only apples at A and trade its way to C on I_3 by importing some suits in exchange.

Hagen suggests a "prohibitive tariff or other device"[3] to prevent such international trade. He asserts that this will move the economy to D on I_3. He assumes that equilibrium without trade will involve full employment (the economy being somewhere on AM) and a consumers' mar-

* The work on this article was done while I was Visiting Graduate Professor at Southern Methodist University.

[1] Adam Smith wrote: "It is the surplus of the country only, or what is over and above the subsistence of the cultivators, that constitutes the subsistence of the town, which can therefore increase only with the increase of this surplus produce." *The Wealth of Nations* (New York: Modern Library, 1937), p. 357.

[2] E. E. Hagen, "An Economic Justification of Protection," *Quarterly Journal of Economics*, November 1958.

[3] *Ibid.*, p. 505.

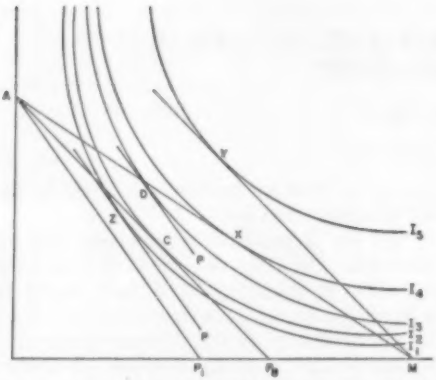

FIG. 1. Protection As A Third Best Policy (Single Factor Case).

ginal rate of substitution corresponding to the internal exchange rate (the relevant consumer indifference curve will be parallel to AP_i where the former intersects AM). Under these circumstances D is always superior to C. And, for some unexplained reason, this third best possibility is held to "justify" protection. Why it is "third best" is described below.

Two minor but not unimportant objections to this argument should be mentioned as a preliminary. First, the incidence of partial and nontariff measures of protection is ignored, despite its greater practical importance and although some degrees of quota restriction would make the economy absolutely worse off.[4]

Second, Hagen's case is a rather special one, for his diagram is constructed so that the external apple to suit ratio has a value in between that of the internal exchange ratio and domestic opportunity costs; either of the *other* two possible rankings disposes of the argument, and so a mere disparity between AP_i and AM is not sufficient for even complete protection to provide a third best improvement in welfare.[5]

A major objection to the whole analysis is that complete protection represents a third best policy for it puts the economy at D on I_3. Governmental measures to remove any actual discrepancies between internal opportunity costs and market exchange rates for apples and suits —even with no external trade—would provide a second best outcome in the single factor case by moving the economy to X on I_4. And a removal of all these internal disparities, together with free trade so that the economy will specialize in making suits and trade to Y on I_5, is the best policy of all.

Disparities between real and money internal costs do usually justify government intervention. But anyone who recommends the inferior solution of *protection* has a moral responsibility to show that these disparities cannot be eliminated by taxes, subsidies, or other means. And, if an economy is malfunctioning, it is usually better to remove the cause than treat the symptom.

SPECIAL PROBLEMS OF BACKWARD COUNTRIES

All these objections to Hagen's "justification" of protection would apply whether or not the economy in question was that of an advanced or backward country. And in reality his own formal argument is equally general.[6] Actually, when one considers the situation in many underdeveloped but overpopulated countries, a rather different sort of analysis seems more appropriate.

A characteristic of all really poor countries is the prevalence of hunger. The composition of the gross domestic product is then as vital as its magnitude. It must, supplemented perhaps by food imports, include enough nourishment to maintain the population. Transformation curves

[4] Suppose an import quota on suits is steadily reduced in quantity. The initial effect is to move the economy back from C on AP_s towards A and so to *lower* consumer indifference curves. There will be some import market quota that will put the economy at Z on I_3 and AP_s where the domestic market exchange rate between apples and suits will become equal to AP_i. Even smaller import quotas will lead to increasing domestic production and a zero quota will take the economy to D on I_3. The economy, as quotas are reduced, will gradually move from C to Z (becoming worse off) and then from Z to D (improving its position). Granted all Hagen's assumptions, and ignoring all other objections raised below, there are hence some degrees of partial quota protection in the single factor case that cannot be termed "justified" under any interpretation.

[5] In Fig. I, if AP_s is flatter than AM, the economy produces at A and trades to an indifference curve higher than AM and so preferable to D; if AM is steeper than AP_i, the economy should specialize at M, and again trade to an indifference curve always higher than AM.

[6] Even the reason given for "high" industrial wages, namely that in a dynamic economy inducements must be adequate to overcome the reluctance of rural workers to move to urban industry, applies also to many advanced economies.

showing alternative outputs of industry and agriculture may then be without practical significance. It is not very useful to know that, if only they could be given enough food to remain alive, a given transfer of workers would result in a y decrease in agricultural output and an x increase in industrial production.[7]

A possible rejoinder is that, in some seriously overpopulated countries with redundant rural labor, a migration out of agriculture into industry will not reduce food output. Even were this true, and neglecting the important distinction between the marginal product of rural work hours and rural workers, a formidable obstacle to industrialization remains. In poor countries, and especially in regions where the extended family prevails, migration from country to town will *increase* the minimum food output required to sustain the new geographic and occupational distribution of population.

Unfortunately, in such countries, the people who leave the rural areas in search of work do not take their food supply with them. The rural family does not send weekly food parcels to its city relatives. In fact, the absent member, if he obtains employment in town, is supposed to remit some savings to his parents. Those who remain behind in the village tend to eat all that is available; the previous share of absent relatives is mostly consumed by those who remain. Accordingly, paradoxical though it may seem, one of the requirements of increased industrial output is *increased* national availability of food.

How does the urban population obtain its food? One way is of course to import food in exchange for industrial exports; however primitive countries are often at a competitive disadvantage when it comes to exporting finished consumer and producer goods. The only alternative is to sell industrial output in exchange for domestic agricultural output. But the internal domestic terms of trade will not advantage the urban population unless rural production increases per worker. It is only as the rural population achieves a higher real income through increased agricultural output that it begins to offer more food in exchange for industrial goods. This is one cause of the high cost of urban living, which "inertia" has to be offset by higher wages in many poor and backward countries.

Any developing economy, in which there is a slow but steady migration from countryside to township, has to construct and install a great deal of urban overhead capital. Not only dwellings and streets, but also water, electricity, and sewerage have to be provided. Even should these be financed by foreign loans, debts service will entail higher taxes and considerable housing rents. Nearly all these extra costs come to bear upon the inhabitants of the towns. And these must often also be offset by higher wages.

Under such circumstances care must be taken in defining a transformation curve between agricultural and industrial outputs. It is one thing to compare the amount of agricultural and industrial "bales" that a given quantity of labor could alternatively make if no change in urban overhead capital was involved. However, in a developing economy, the labor cost of increased industrial output is both the hours required to make the goods *and* the work required to construct all the associated urban amenities.

In a larger sense, there is then little if any comparative disparity between real and money costs when expanding industrial output at the cost of agricultural production, and hence almost nothing exists to rectify through protection. If the transformation curve AM in Fig. 1 refers only to private employers of agricultural and industrial labor, it is not very relevant when extra output of "suits" also involves extra urban overhead capital. Alternatively, while a transformation curve that includes labor for associated urban amenities would be relevant, it would be steeper than AM. And if the urban overhead capital is paid by town inhabitants who get correspondingly higher wages to offset their extra cost, the true transformation curve might be almost coincident with AP_t.

Suppose rural wages are 40¢ a day and urban wages 80¢ a day. Rural labor produces 10 apples a day and urban labor produces 1/25 of a suit a day. Apples cost 4¢ each and suits cost $20 each for a market exchange rate of 500 apples to a suit. The physical opportunity costs appear to be 250 apples to a suit. Certainly, there is a disparity, but before protection or any other remedy is suggested it is necessary to know why urban wages are twice rural wages.

[7] The collective consumer indifference curve and the economy's transformation curve are interdependent when one of the axes is food; neglecting the possibility of food imports, and given the axes of Fig. 1, the transformation curve must become almost vertical once the consumers' indifference curve becomes almost horizontal.

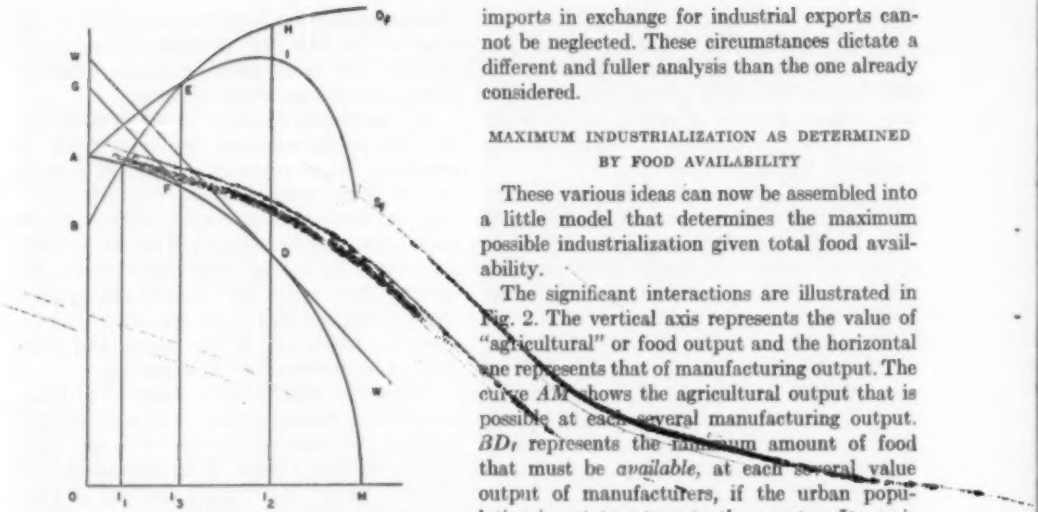

FIG. 2. Food As A Constraint On Industrialization.

Living costs may be twice as high, and the utility satisfaction no greater, with half each industrial worker's wages spent on higher priced food, always scarce lodgings, and shifted taxes levied to finance urban amenities. Of the daily earnings of each worker in suit making, perhaps one half must go to the urban workers who provide all these extra services that are necessary in towns but make them no more attractive than the country. These "other" urban workers in turn must directly and indirectly spend half their earnings on "support" labor. So out of all urban labor, only one half is in "industry" or suit making. Under these circumstances there is nothing to remedy.[8]

Industrialization, in a poor but developing country, cannot ignore these facts; namely that the food component of national output is of vital significance, that a larger urban population can only be sustained by increased food availability, and that urban amenities must be produced as an incident to increased industrial output. And the possibilities of obtaining food imports in exchange for industrial exports cannot be neglected. These circumstances dictate a different and fuller analysis than the one already considered.

[8] Alternatively, workers may dislike the longer hours and stricter discipline of industrial labor, as compared with rural life among relatives. Industrialization, if this is the reason, involves output of greater value but also more disutility. It is not obvious that intervention by government is desirable.

MAXIMUM INDUSTRIALIZATION AS DETERMINED BY FOOD AVAILABILITY

These various ideas can now be assembled into a little model that determines the maximum possible industrialization given total food availability.

The significant interactions are illustrated in Fig. 2. The vertical axis represents the value of "agricultural" or food output and the horizontal one represents that of manufacturing output. The curve AM shows the agricultural output that is possible at each several manufacturing output. BD_f represents the minimum amount of food that must be *available*, at each several value output of manufacturers, if the urban population is not to return to the country. Its positive inclination reflects the tendency of rural extended families to eat the food share of relatives who have migrated to the towns.[9]

The problem, for a country bent on industrialization, is that this means a shift of population from a rural to an urban habitat and away from the village source of food supply. But this shift, in addition to adding urban costs and decreasing food output, increases total food demands if the new population distribution is to be sustained. People will not stay where they are if they lack some minimum of food.

In a closed economy the maximum possible industrialization is that which renders the maximum food requirement equal to the available food supply. This is shown by the intersection of the AM and BD_f curves respectively at C. A greater degree of industrialization than I_1 is not sustainable because of inadequate food supplies in the cities.

In an open economy, where manufactured consumer goods can be exported in exchange for food imports, the practicability of optimum industrialization depends among other things on world prices. The maximum available food supply from both domestic and foreign sources is then given by the intercept on the vertical axis of a line tangent to AM and having a slope rep-

[9] The AM curve is only reversible if it excludes urbanization costs when the economy moves towards greater industrialization.

resentative of the external exchange ratio between food and manufactures. In Fig. 2, WW is such a price line, and OW is the maximum food supply. Unless this provision of food proves to be inadequate, the economy can presumably be best off producing at D, as the highest attainable consumer indifference curve will be tangent somewhere to WW.[10] This gives an industrialization of I_3.

The maximum possible industrialization with external trade is determined by the intersection at E of BD_f and AS_f; these curves respectively represent the minimum food requirement and the maximum food availability, at varying degrees of industrialization. The curve AS_f is peculiar to the given set of world prices as indicated by WW.[11] In the present case and despite EF imports of food, assuming government wished to maximize industrialization, it could not proceed beyond I_3 because of an inadequate food supply. Hence I_3, the theoretical ideal, is not immediately practicable.

These general theorems, and the associated diagrammatics, apply to both backward and advanced countries. The difference is that, with advanced countries, lack of food does not prevent attainment of the otherwise highest possible consumer indifference curve. Perhaps one measure of "underdevelopment" is that inadequate food is an effective constraint on attaining what would otherwise be considered an optimum current degree of industrialization.[12]

[10] No part of any consumer indifference curve can lie below an imaginary line extending horizontally from B because OB is the absolute minimum food requirement.

[11] For every point on AS_f there is a related point directly below on AM. Consider E and F for instance. E has the same ordinate value as G, which is obtained by running a line from F parallel with WW. Thus the maximum value of AS_f must be directly above the tangency of the external exchange ratio and AM. An increase in world prices for food will occasion a new and lower AS_f curve.

[12] Another possible indication of poverty and backwardness may be a positive inclination to the minimum food requirement curve. Advanced countries may in contrast have a straight and horizontal BD_f relationship. All backward countries may have an OA greater than OB—as shown in Fig. 2—but it does not follow that all advanced countries would have a surplus food output with almost zero industrialization. One can suppose that New Zealand would, but that Great Britain would not.

SOME POLICY CONCLUSIONS

What can be done by government, which presumably would prefer the economy at I_3 with a production mix of D, when food limitations constrain it to F and I_2?

Protection of industry against imports is then redundant because the economy is *exporting* manufactures.

Nothing can be done about the terms of trade unless a country possesses monopolistic or monopsonistic powers that it is able to exercise without retaliation.

Urban austerity, with prohibition of all save the most essential town housing and utilities, will increase (at any given food output) the amount of manufactures available for export in exchange for food; but such a policy clearly cannot be carried so far that rural workers will not voluntarily migrate to industry and a life in "barrack" towns.

Conceivably there are some ways in which rural families might be encouraged to market more of their output, rather than consume the share of absent relatives, but it is hard to imagine what they can be in a democratic society. Communist countries, however, have always sought to force development by compelling growers of food to give or sell considerable fractions of their output. Apparently their planners understand the importance of making more food available to industrial urban workers.

Otherwise, assuming voluntary behavior, the only "solution" appears to be increased productivity and output of food or exportable manufactures. In poor countries, constrained by inadequate supplies of food, industrialization is a result and not a cause of economic development. This is exactly the opposite of the majority view.[13]

[13] This analysis indicates the possible importance of food gifts or loans by wealthier countries with agricultural surpluses. In the case depicted in Fig. 2, unrequited food imports, amounting to HI, would permit I_2 industrialization. The resultant increase in welfare for the receiving country is then greater than if it was given this quantity of food without any change in degree of industrialization. Thus, there appears to be a *prima facie* case for food gifts and loans to certain underdeveloped and overpopulated countries, although whether wealthy food surplus countries should dump abroad unilaterally is another matter.

ON THE THEORY OF DEMAND FOR CONSUMER DURABLES*

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Durable goods occupied an obscure, relatively neglected corner of the theory of demand for many years. Marshall was content in the *Principles* with the statement that the value of a durable good to its purchaser is the aggregate of the benefits expected over the life of the good, allowance being made for their uncertainty and their distance.[1] Hicks ignores consumer durables in all essential respects in *Value and Capital*.[2] Few textbooks give them any attention at all.[3] Only recently with the appearance of several theoretical contributions and a large number of empirical studies of demand for specific goods have consumer durables begun to attract notice commensurate with their importance in consumer expenditures.[4]

Despite this increase in interest, the theory of consumer durables remains highly underdeveloped. This paper attempts both a careful exposition of the problems encountered in analyzing demand for these goods and some improvements in the present state of the theory. We hope that it will interest readers who have given little thought to the subject as well as those actively working in this area.

NEGLECT OF DURABILITY IN THE STANDARD THEORY

As noted above, the usual discussion of demand ignores durability. The familiar theory of consumer behavior implicitly assumes that purchases equal consumption of each commodity—e.g., that the unit of time in the analysis encompasses the life span of durables or that consumers rent durables. Otherwise the demand curve would oscillate. If the quantity demanded is a rate of purchase, explicitly or implicitly it is an average rate of purchase over a unit of time during which purchases equal consumption. If the quantity demanded is a quantity held, purchases must offset consumption if stocks are to remain at the indicated levels.[5] The theory of saving as found in Fisher's *Theory of Interest* also ignores consumer durables. Utility is a function in this theory of total consumption in the various time periods. Subject to qualifications relating to the characteristics of the capital market, the individual

* I am indebted to several colleagues at the University of California, Los Angeles for comments on this paper.

[1] A. Marshall, *Principles of Economics*, 8th ed. (London: Macmillan, 1920), pp. 123, 841.

[2] For unresolved references to consumer durables, see especially pp. 176 and 229 of J. R. Hicks, *Value and Capital*, 2d ed. (London: Oxford University Press, 1946).

[3] Stigler is the only textbook writer who says anything substantive about demand for durables. See the references to short versus long-run elasticity and to fluctuations in the prices of durables in G. J. Stigler, *The Theory of Price*, rev. ed. (New York: Macmillan Company, 1952), pp. 46 and 49.

[4] For theoretical contributions, see D. W. Bushaw and R. W. Clower, *Introduction to Mathematical Economics* (Homewood, Ill.: Richard D. Irwin, 1957), pp. 128–39; J. S. Cramer, "A Dynamic Approach to the Theory of Consumer Demand," *Review of Economic Studies*, February 1957, pp. 73–86; A. H. Fox, "A Theory of Second-Hand Markets," *Economica*, May 1957, pp. 99–115; and H. Neisser, "The Pricing of Consumers' Durables," *Econometrica*, October 1959, pp. 547–74. I have criticized parts of Fox's analysis in H. L. Miller, Jr., "A Note on Fox's Theory of Second-Hand Markets," *Economica*, August 1960, pp. 249–252.

Among the many empirical studies, see especially C. R. Roos and V. von Szeliski, "Factors Governing Changes in Domestic Automobile Demand," *Dynamics of Automobile Demand* (New York: General Motors Corp., 1939), pp. 20–95; M. J. Farrell, "The Demand for Motor Cars in the United States," *Journal of the Royal Statistical Society*, CXVII (1954), A, Pt. 2, pp. 171–201; G. C. Chow, *Demand for Automobiles in the United States* (Amsterdam: North Holland Publishing Co., 1957); R. A. Stone and D. A. Rowe, "The Market Demand for Durable Goods," *Econometrica*, July 1957, pp. 423–43; D. B. Suits, "The Demand for New Automobiles in the United States 1929–1956," *Review of Economics and Statistics*, August 1958, pp. 273–80; and A. C. Harberger (ed.), *The Demand for Durable Goods* (Chicago: University of Chicago Press, 1960).

[5] Both flow and stock supply and demand functions appear in the analysis of current sales and price determination of a commodity fixed in total supply made familiar by Wicksteed and other writers. But only two of these functions—aggregate demand equal to new demand plus reservation demand and aggregate supply—continue into succeeding time periods. See, e.g., Stigler, *op. cit.*, pp. 152–53.

maximizes utility by undertaking all investments with a present value greater than zero and borrowing or lending that amount of funds which equates his marginal rate of time preference to the rate of interest.[6] Fisher makes several references to investment in consumer durables but leaves extension of his thoughts to the reader.[7] The analysis ignores the fact that the optimum pattern of consumption within a period and the optimum level of consumption in each period are not independent of one another when some goods yield benefits over several periods.

Neglect of durability enormously simplifies economic theory and any competent economist would point out that demand for current production of, say, automobiles depends upon stocks in the hands of consumers and the cost of credit. Anyone attempting to analyze demand for consumer durables, however, must turn to the until very recently almost nonexistent literature especially concerned with consumer durables and *ad hoc* theorizing.

THE SEVERAL FACETS OF DURABILITY

A durable good yields benefits over several periods of time. Consumers thus save and invest when they purchase such goods. Since consumption is not completed in a single period, moreover, demand for current production depends upon stocks already in the hands of consumers and on consumers' disposition of these stocks. Markets for second-hand goods arise. All this is rather obvious. The difficulties appear when one attempts to progress beyond these elementary observations. We begin our inquiry into these difficulties with a consideration of the theory of investment in consumer durables using Fisher's theory of investment as our frame of reference.[8]

[6] See, e.g., J. Hirshleifer, "On the Theory of Optimal Investment Decision," *Journal of Political Economy*, August 1958, pp. 329–52, and M. J. Bailey, "Formal Criteria for Investment Decisions," *Journal of Political Economy*, October 1959, pp. 476–88.

[7] See especially pp. 7–9 of I. Fisher, *The Theory of Interest* (New York: Kelley & Millman, 1954). Fisher speaks of the fair equivalent of rent of a house and evening suit owned by an individual. "Deducing such equivalents is an accountant's job" (p. 7). He refers to investment in automobiles and states that "Theoretically, [a] barrel of apples is an investment comparable to a house or any other durable good" (p. 9).

[8] Several writers have attempted to generalize utility theory to include both stocks and flows. See the work of Bushaw and Clower and Cramer cited in note 4. So far as we know, no one has examined the implications of consumer durables for the standard, Fisherian approach.

INVESTMENT IN CONSUMER DURABLES

Consumers do not have to invest in consumer durables. They may rent durable goods from sellers who assume the investment function for them. Consumers clearly think more often than not that investment in consumption goods is economical. To what extent can we formalize the economics of this decision? As noted above, there can be no fully satisfactory place for consumer durables in a theory utilizing Fisher's distinction between intra- and inter-period decision-making. One can establish the main characteristics of the investment decision and the resulting demand for current production, however, without abandoning this dichotomy. Since there is no general theory of behavior under conditions of uncertainty, we assume that benefits and costs of goods are known by consumers with certainty. We also assume that consumers can borrow the full cost of durable goods at a fixed rate of interest and repay over the whole of each good's lifetime—an unrealistic assumption commonly adopted to simplify the theory of investment. And we ignore for the moment the fact that variation in benefits and costs over time introduces a problem of optimal replacement, i.e., take the period of time a buyer keeps a good as given.

If the individual already knows that investment in consumer goods is uneconomical, optimal allocation of income among goods and over time requires satisfaction of well-known marginal conditions. Our concern is optimal allocation when it is cheaper to own than to rent consumer durables.

We may suppose that the consumer has a finite horizon of nL years, has already chosen an optimal pattern of consumption over time, and is considering a set of commodities which includes a good with a life of L years. With the financing conditions assumed, he can borrow to purchase consumer durables without affecting his ability to consume currently. The annual cost to him of a durable good with a life of L years over a horizon of nL years is the per period sum which would pay off n successive L-year loans obtained to purchase the durable, plus the operating expense per period. Optimal allocation

of expenditures among commodities apparently would require that the marginal rate of substitution between a nondurable good and a durable good with a life of L years be equal to the ratio of the price of the nondurable to this annual sum, and that total expenditures in each period equal total planned consumption. Algebraically, these conditions appear as:

$$\frac{u_1}{u_2} = \frac{p_1}{p_2(1 - e^{-r})/(1 - e^{-Lr}) + o_2} \qquad (1)$$

$$p_1x_1 + \left[p_2\frac{1 - e^{-r}}{1 - e^{-Lr}} + o_2\right]x_2 = c \qquad (2)$$

where x_1 is consumption of a nondurable good, x_2 the quantity of the durable good held, p_1 the price of the nondurable, p_2 the price of the durable, o_2 operating and maintenance expenses of the durable (here assumed constant), r the rate of interest, c total consumption expenditures, and u_1/u_2 the marginal rate of substitution or ratio of marginal utilities of the two goods, all except p_2 per some unit of time. The denominator on the right of the equality sign in (1) is the per period cost or rental equivalent of having (and partially consuming) a stock of the durable good equal to x_2 plus the operating cost per period.[9] It will be cheaper to own than to rent, only if the rental equivalent above is less than the cost of the good if rented.

In equation (2), per period expenditures for the nondurable plus the rental equivalent cost of the durable add up to c. If planned consumption in each period equals c, all is well. But optimal allocation of consumption over time may require varying expenditures in different periods. What then? The solution above serves as an approximation to a more general solution which depends upon the set of total consumption choices and the assumed lives of the durables.

There is more to be said than this, however. Including interest costs in calculating the price of a consumer durable in among commodity allocation seems an obvious thing to do. But what are we assuming about the relationship between investment in consumer goods and investment in general? In the description above, the consumer continues to think in terms of intra- and inter-period allocation while ignoring consumer durables in his investment decisions generally. He includes interest in the cost of consumer durables and thus weighs present against future benefits in all his saving-investing decisions. If the cost of credit rises as the consumer's borrowing increases, rental equivalents increase, and investment in both consumer durables and other opportunities is less profitable. The consumer cannot compare, however, the profitability of investment in consumer goods with its profitability elsewhere. This is possible only if one puts a money value on the benefits offered by ownership of consumer durables. A more general theory would require the consumer to choose a set of $m.nL$ independently variable consumption quantities of m commodities over an nL-year horizon subject to a set of constraints including the assumed lives of the commodities.

An alternative way to incorporate consumer durables into utility maximization is to suppose that the consumer looks at rental prices in allocating expenditures within each period and groups purchases of consumer durables with investment opportunities in general. One can put a money value on the benefits obtained from a house or a car on the basis of its value in terms

[9] We assume that the consumer buys the durable at the beginning of the year, that the lender deducts the first payment on the loan from the sum borrowed, and that interest is compounded continuously. The rental equivalent not including operating expenditures is the constant annual sum paid in nL installments with the same present value as n payments of p_2 made at L-year intervals over the nL years. The present value of n payments of p_2 at L-year intervals is $p_2(1 + e^{-Lr} + e^{-2Lr} + \cdots + e^{-(n-1)Lr}) = p_2(1 - e^{-nLr})/(1 - e^{-Lr})$. The annual sum payable each year for nL years with the same present value is $p_2(1 - e^{-r})/(1 - e^{-Lr})$. (It is the same annual sum as one paid in L installments with a present value equal to p_2.) One can easily incorporate varying operating costs and a terminal value into the formula.

The conditions for maximum satisfaction assume an ordinal utility function where the consumer compares alternative streams of services with their present value costs or annual equivalents. The same conditions obtain if we let $u = u(x_1, x_2)$ be the "annual utility function" for a consumer for this and all succeeding years. Maximizing

$$u' = u(x_1, x_2) - \lambda\left[p_1x_1 + \left(p_2\frac{1 - e^{-r}}{1 - e^{-Lr}} + o_2\right)x_2 - c\right]$$

leads to equations (1) and (2) above. This procedure is mathematically identical to the investment theory in V. Smith, "The Theory of Investment and Production," *Quarterly Journal of Economics*, February 1959, pp. 61–87, except for Smith's assumption of an infinite rather than a finite planning horizon.

of other commodities or the amounts that will have to be paid if it is rented. If the present value rule applies, owning a consumer durable is a good investment if the present value (or annual equivalent) of the stream of revenues minus costs is greater than zero. Factors favoring ownership include the better care the individual owner may give a good as compared to an average renter, any value attached to ownership per se, the enjoyment of repairs, income tax laws which subsidize ownership, and a low expectation of selling in the near future.

Up to this point we have assumed that the consumer can borrow the full cost of the good and repay over the whole of the good's lifetime. The outstanding characteristic of consumer credit is that credit is available—with the good purchased serving as collateral—only to the extent of a maximum loan value repayable over much less than the full life of the durable. The customary assumptions regarding utility surfaces imply that there is a stream of payments over the life of a durable which is equivalent, in the consumer's estimation, to another stream of payments such as a loan would require. This stream can serve as the annual cost of the durable in equations (1) and (2) above, but the theory of investment has little to say at present about optimal investment with these financing conditions, and we do not wish to consider this problem here.

OPTIMAL REPLACEMENT POLICY

Variation in benefits and in operating and maintenance costs over the life of a durable good introduces a problem of optimal replacement, i.e., the L of the preceding section is not, in general, given. Optimal replacement policy has received considerable attention during the past fifteen years. The replacement problem as generally understood consists of choosing that pattern of purchases of a durable good—say an automobile—through time which maximizes the present value (or its annual equivalent) of holding an automobile over the whole period covered by the purchaser's horizon—or, if we agree with V. Smith's recent argument that "replacement" ought by definition to refer solely to a problem in cost minimization, that one should assume maintenance at levels which keep revenues constant and exclude revenues in formulating the problem, the pattern which minimizes the present value (or its annual equivalent) of the cost of holding an automobile over that horizon.[10] Our discussion of investment in consumer durables assumes optimal replacement. Note that estimates of benefits and costs associated with automobiles bought now and in the future are a costly but indispensable requirement of any procedure which purports to give a correct answer to the general replacement problem.

A number of writers have contributed to the solution of the replacement problem as stated above.[11] The optimum life will be the same for all future goods if the purchaser has an indefinitely long horizon. The reader is referred to the studies by Terborgh and Alchian for the correct general formula in this case and for examples of the use of simplifying approximations.[12] Dreyfus has recently published in the RAND paper cited above a general solution to the problem of evaluating the 2^x combinations of decisions to keep or to replace involved in a finite, x-year horizon, an ingeniously simple dynamic programming solution easily obtained with the help of a computer. It allows the information about revenues and costs, moreover, to be in tabular form, i.e., does

[10] Smith, *op. cit.*, pp. 73–74.

[11] The major contributions include: F. and V. Lutz, *The Theory of Investment of the Firm* (Princeton: Princeton University Press, 1951); G. Terborgh, *Dynamic Equipment Policy* (New York: McGraw-Hill Book Co., 1949); A. A. Alchian, *Economic Replacement Policy* (Santa Monica, Calif.: The RAND Corporation, April 1952); R. E. Bellman, "Equipment Replacement Policy," *Journal of the Society of Industrial and Applied Mathematics*, September 1955, pp. 133–136; and S. E. Dreyfus, "A Generalized Equipment Replacement Study" (Santa Monica, Calif.: The RAND Corporation, March 1957).

[12] Smith assumes in the article cited earlier that operating costs for a durable producer's good depend on the input of a cooperating factor and finds that replacement policy depends upon the input mix as well as vice versa. (Smith, *op cit.*, pp. 78–80.) Such interdependence would appear to be uncommon in consumption.

Incorrect formulas continue to appear in the literature. H. Brems (*Product Equilibrium under Monopolistic Competition* [Cambridge, Mass.: Harvard University Press, 1951], p. 30) and A. H. Fox following him (Fox, *op. cit.*, pp. 102–3) present a formula which minimizes annual average cost excluding interest over the life of a single durable. It calls for replacement when marginal operating cost equals average cost including the purchase price of the durable, and is equivalent to the "maximum mean annual growth" formula for maturity in the forestry literature.

not require any linear or other type of mathematical approximations, and can take account also of opportunities to buy used as well as new goods and other possibilities.[9] For our purpose here, it is sufficient to note that a general solution to the replacement problem as stated above exists (this ignores the cost of acquiring the relevant information and the calculating) and that the prices at which one can buy and sell new and used goods are parameters in these formulas.

INDIVIDUAL DEMAND

Equations (1) and (2) above relate to utility-maximizing behavior for an individual making decisions at the beginning of an nL-year period of time who intends to keep the durable good over a specified lifetime. Solving the equations for x_1 and x_2 leads to the individual's steady-state demand functions for the two commodities with purchases occurring at L-year intervals. The more general discussion of the preceding section implies qualitatively analogous behavior.

What happens if the consumer's circumstances change? A change in circumstances leaves him with a no longer optimal stock of durables. If there were no discrepancy between the price he pays for a good and the price received if he sells it an instant later, he would move at once to a new long-run equilibrium position. As it is, the price paid for a good and the price obtainable from selling it differ as a result of second-hand status and transaction costs. If his stock is now too small, he can immediately adjust it upward to the new long-run equilibrium level. If it is too large, it often will be economic to wait until the end of the period to adjust his stocks to the new long-run equilibrium level, the cost of an already held good being less than the cost of purchasing another one like it.

A SIMPLE AGGREGATE DEMAND FUNCTION

As a little reflection reveals, aggregate demand for consumer durables is a complicated phenomenon. On the one hand, changes in circumstances and the variation in the benefits offered by durable goods over time lead to exchanges among consumers in second-hand markets which influence demand for current production. At the same time, transaction costs prevent continuous adjustment of consumers' stocks to long-run equilibrium levels.

The level of transaction costs relative to the benefits obtainable from selling a durable often rules out any substantial volume of second-hand exchanges. This is approximately true in the case of stoves, washing machines, typewriters, and many other commodities. In this circumstance, one can assume a relatively simple market demand function widely utilized in recent empirical work. One assumes that there is an aggregate "desired" stock of the durable good capable of rendering the desired level of services which depends upon purchase price, operating and maintenance expenditures, income, etc., and that goods of any age except those ready for scrapping (or "other markets") are perfect substitutes in satisfying the demand for this stock. The stock available to satisfy demand falls by an amount predictable from the age distribution of the stock at the beginning of the period (or the history of sales) and purchases per unit of time occur to adjust the actual stock to the desired level. Purchases will be some fraction of the discrepancy between the desired and the actual stock if there is a lag in purchases. The failure of the actual stock to equal the "desired" stock does not imply that consumers are involuntarily delaying purchases.

Roos and von Szeliski used this formulation of the demand function in their pioneering study of demand for automobiles.[10] On theoretical grounds, one expects it to lead to better forecasts the less frequently changes in parameters make the existing stock too large as compared to too small. In the latter case, consumers are always close to long-run equilibrium positions. A popular procedure at the present moment is to make replacement demand equal to some percentage of the stock at the beginning of the period rather than the number of units ready for replacement as a result of the age distribution. This procedure has no a priori justification where consumers typically hold goods from purchase to scrapping, but it may be useful when this is not the case.

THE INTERDEPENDENCE OF NEW AND SECOND-HAND DEMAND

Although the demand function of the preceding section has its uses, it fails to come to grips with the existence of second-hand ex-

[9] Dreyfus, *op. cit.*, pp. 14–16.

[10] Roos and von Szeliski, *op. cit.*

changes. The theory of second-hand exchanges has received almost no attention from economists.[16] It is easy to show in terms of the formula for optimal replacement that the optimum time for any individual to hold a durable good depends upon the price of new goods and trade-in allowances. A decision to trade-in a good is a decision to supply it to someone else. This offers no explanation, however, for the existence of a trade-in allowance, a demand for the used good. As Fox points out in the article cited earlier, second-hand exchanges arise as a result of divergent estimates of repair costs, differing willingness to bear risks of breakdown, and different evaluations of newness per se as well as differences in individual circumstances.[17] Given these differences there will be a demand and corresponding supply of goods of different ages. This section presents a model of the interdependence of markets for new and used goods which illustrates certain aspects of the subject.

Consider a good whose value to consumers varies discretely with its age in years. Assume initially that the life of the good is two years and that consumers always rent, never own, this good. D_1 and D_2 in Figure 1 represent demand for the services rendered by the good in its first and second years respectively. We have drawn the demand curves in the figure as if they were independent. C is the cost of production per unit of the good. Now what will current production of the good be and what prices will buyers of the different services pay?

In any particular year, last year's production is given and receipts from current production depend upon output in the two successive years. D_T in Fig. 1 is obtained by summing D_1 and D_2 *vertically*. D_T shows the revenue obtainable per unit from the sale of the services of the durable over its lifetime (with D_2 discounted back to the present) when the market is in full equilibrium. Fig. 1 is applicable to any case of joint production, here joint production of services in the two different years.[17] Competitive static equilibrium would result in an annual industry output of X, total receipts per unit of P_1, and prices P_1 and P_2 for the goods in each year of service. The total stock of durables equal to $2X$ would include X new units and X units one-year old. P_1 and P_2 are representative also of the costs incurred by owner-consumers of new and second-hand goods where a low level of transaction costs relative to the valuation consumers place on new versus second-hand goods encourages a second-hand market. First owners would pay P_T for new units and receive a trade-in allowance of P_2 one year later for an annual cost of P_1. Second owners would pay P_2 for the use of the good in its second year of service.

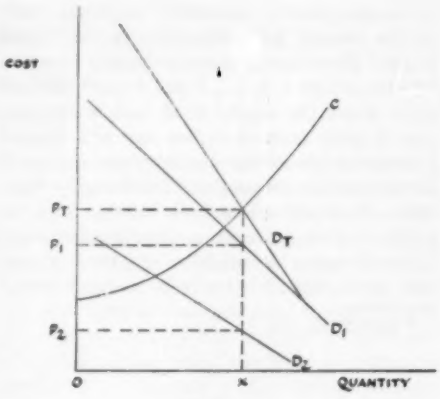

Figure 1

In this simple model, new production equals current supply of second-hand goods and current scrapping (all flow quantities), but the general conclusions do not depend upon this characteristic of the model or the limitation to two years. Current production depends upon both new and second-hand demand. An increase in demand for second-hand units increases production per unit time and lowers the price of new units (we ignore the possibility that an increase in second-hand demand may be offset by a decrease in new demand). A decrease in second-hand demand—e.g., a decrease in second-hand demand for standard-size cars as a result of the introduction of compact cars—lowers production and increases the price of new units.

Farrell utilizes a model essentially like this one

[16] The only work on this subject that we have seen consists of the article by Fox and my comment cited in note 4 above. I make use of a figure like Figure 1 below in this comment.

[17] Fox, *op. cit.*, pp. 104–5.

[17] See P. O. Steiner's analysis of the "peak pricing" problem in "Peak Loads and Efficient Pricing," *Quarterly Journal of Economics*, November 1957, pp. 585–610. Steiner notes Samuelson's use of vertical summation in an analysis of the theory of public expenditures.

in an exceptionally noteworthy empirical study of the demand for automobiles in the United States.[18] He estimates separate demand functions for cars of age 1, 2, . . ., 5 and 6 years old and older where the supply of all cars except new ones is given from an earlier year and demand for current production depends upon the set of interdependent demand and fixed supply functions. Chow and others have wrestled with the problem of second-hand markets in other ways, Chow by using the model of the previous section where demand is for "new car equivalents," a total of all automobiles weighted by prices in an earlier year.[19] All of these approaches ignore the role of transaction costs in preventing continuous long-run consumer equilibrium. Unfortunately, no one has systematically investigated the predictive powers of the several alternative models of automobile demand which have appeared in recent years. Whatever the conclusion, much remains to be done before we will have a generally satisfactory theory of markets for consumer durables.

[18] Farrell, *op. cit.*

[19] Chow, *op. cit.*

PRODUCT RATE DISCRIMINATION IN MOTOR TRUCKING*

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The present study constitutes an empirical investigation of the influence of the value-of-service principle in rate making in motor trucking. More specifically, it is an investigation of the value-of-service principle as it influences the determination of the different rates charged for the transportation of various products by motor truck.

The value-of-service principle is a well-recognized determinant of the pricing of regulated transportation services, gas and electricity and many manufactured products.[1] The theoretical explanation of this type of pricing was developed by Pigou and Joan Robinson and has been known in Economics as a particular part of the theory of price discrimination. In the economist's terminology, the value-of-service principle as found in motor trucking is "third-degree price discrimination."[2]

For the practice of third-degree price discrimination there are two prerequisites—an ability to separate the total market into distinct submarkets and the existence in those submarkets of differing demand price elasticities or differential degrees of monopoly power.[3] In motor trucking one method of distinguishing between customers is on the basis of the products they wish transported. This is, of course, not the only method by which market separation is accomplished in motor trucking—hence the "product" in the title of this study. Since the price charged for the provision of motor-truck services is ordinarily referred to as the "rate," the form of pricing investigated by this study is called herein "product rate discrimination."

The monopoly-power prerequisite is met in motor trucking by control of entry into the industry and collusion in pricing by those firms already members of the regulated portion of the industry. Given control of entry and collusion in pricing, the elasticity of the demand for motor-truck services will vary among customer groups separated on the basis of the products they wish transported. The result will be rate differentials for transporting different products not based on differences in the marginal costs incurred in transporting those products. "Product rate discrimination" is thus a more precise equivalent of one of the major manifestations of the value-of-service principle.

The study is devoted to the following four questions:

(1) Do the data, despite their limitations, indicate that there *exists* discrimination between products in the rates charged for truck transportation?

(2) Do the data provide any indication of the *extent* of the discrimination between products in setting rates?

(3) Do the data indicate that rate setters are *consistent* in the manner in which they discriminate between products in setting rates?

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[1] Cf. Ralph Kirby Davidson, *Price Discrimination in Selling Gas and Electricity* (Baltimore, Md.: The Johns Hopkins Press, 1955); Eli W. Clemens, "Price Discrimination and the Multiple-Product Firm," *The Review of Economic Studies*, XIX (1950-1951), pp. 1-11; Fritz Machlup, "Characteristics and Types of Price Discrimination," *Business Concentration and Public Policy*, National Bureau of Economic Research (Princeton, N.J.: Princeton University Press, 1955); Richard H. Holton, "Price Discrimination at Retail: The Supermarket Case," *The Journal of Industrial Economics*, October 1957, pp. 13-32, and W. David Maxwell, "Price Discrimination at Retail: A Comment," *ibid.*, July 1959, pp. 214-217.

[2] Joan Robinson, *The Economics of Imperfect Competition* (London: Macmillan, 1933), p. 187.

[3] *Ibid.* p. 185. The degree of monopoly power is the relative divergence of marginal cost from price. (See Abba P. Lerner, "The Concept of Monopoly and the Measurement of Monopoly Power," *Review of Economic Studies*, June 1934.) Terms such as "monopoly power," "collusion," etc., are used herein in their technical economic senses and possess no necessary moral or ethical connotation.

(4) Do the data indicate that rate setters practice profit-maximizing product rate discrimination? In other words, do the data indicate that the product rate discrimination practiced is of the type to be expected on the basis of economic theory?

EXISTENCE AND EXTENT OF PRODUCT RATE DISCRIMINATION

One of the few available studies of motor-carrier costs and revenue in which the costs and revenue of particular commodities or commodity groups are isolated is the study of Southern motor carriers, completed by the Interstate Commerce Commission in 1946.[4] This study is based upon the freight bill abstracts of fifteen Southern motor carriers for the six-day period, December 11 to December 16, 1944, to which the costs developed in a study of six Southern motor carriers were applied.[5] The costs include operating expenses, rents, and taxes (other than income taxes) and reflect the weight of shipment, length of haul, type of haul (whether single-line or inter-line), whether a minimum charge shipment or other than a minimum charge shipment, and whether truckload or less than truckload. No allowance for profit or return on investment was included.[6]

On shipments made up of different articles the line-haul costs were computed on the basis of the weight of the total shipment and then allocated to each article on the basis of weight. The actual length of haul was used in computing the costs rather than the "rate-making" mileage (which may correspond to railroad rather than motor-truck mileage). No allowance was made for variations in the density of the various commodities. The fixed costs were apportioned on the basis of "out-of-pocket" costs.

The study was divided into an analysis of the movement of interstate traffic between Southern Territory and the Middle Atlantic and New England Territory (taken together) and an analysis of the movement of interstate traffic between Southern Territory and Central Territory.[7]

The study included data from which it was possible to compute the cost of transporting particular classes of commodities, or groups of such classes, and the revenue received therefrom for the two traffic movements, South-Central and South-Middle Atlantic and New England. There were 68 selected commodity groupings studied which were transported between Southern Territory and Middle Atlantic and New England Territory. The same 68 commodity groupings were isolated for study (plus one other—oleo stock) in the commodities being transported between Southern Territory and Central Territory. Only interstate traffic was considered.

The data as presented separated shipments into interline and single-line shipments, into major weight brackets (the weight bracket of the shipment, not necessarily the weight bracket into which the weight of the commodity transported would fall), into mileage blocks (100 mile blocks), and the type of rate applied to the

[4] Interstate Commerce Commission, Bureau of Transport Economics and Statistics, *Interterritorial Traffic Flow, Costs, and Rate Structure of Motor Carriers in Southern Territory*, Parts I and II (Washington, D.C.: U.S. Government Printing Office, 1946).

[5] *Ibid.*, Part II, p. 1. The cost figures were developed from 1943 data and increased five per cent before application to the freight-bill data. An attempt was made to select a reasonable cross section of the common carriers of general commodities operating in the various sections of the South.

[6] *Ibid.*, Part I, p. 6. Single-line costs include the costs incurred in platform handling and for collection and delivery at origin and destination, billing and collection, platform handling at intermediate transfer points (distributed on a ton-mile basis), and line-haul operation. Interline costs include the costs for single-line shipment plus one complete interchange (including the expenses incurred by both parties to the interchange). In shipments which did not move through terminals at the origin and/or destination the appropriate terminal costs are omitted. In computing the platform handling costs on small shipments it was assumed that such shipments were not consolidated. Such costs on small shipments are overstated for this reason. In round-trip operations in which separation between truckload and less-than-truckload traffic was not possible the round-trip average load factor was applied to the traffic regardless of the direction of movement.

[7] Southern Territory consists roughly of Florida, Mississippi, Alabama, Georgia, South Carolina, Tennessee, North Carolina, Kentucky, and Virginia, plus the portion of Louisiana east of the Mississippi. Middle Atlantic and New England Territory consists of the remaining Eastern states which border at any point on the Atlantic Ocean, plus West Virginia, Pennsylvania, and Vermont. Central Territory consists roughly of Illinois, Indiana, Ohio, Wisconsin, and Michigan.

shipment.[8] For example, there was one shipment of auto parts between Southern and Middle Atlantic and New England territories, transported by more than one carrier, for a distance of 800–900 miles, subject to a class rate, and lying within the weight bracket 1–5999 pounds. In addition, the tables gave the actual and billed[9] weight of the commodity transported in the particular subclassification into which the shipment fell.

In Table I (Appendix) the revenue received from and the costs incurred in the single-line transportation of each commodity group in Southern-Middle Atlantic and New England traffic have each been summed without respect to weight bracket, length of haul, or type of rate, and the ratios of revenue to costs have been computed. The ratios of revenue to costs[10] were taken in the present study as the best available indicators of the relationship of the rate to marginal cost.[11] The ratios of revenue to costs in Table I vary widely—from 238.7 per cent for ammunition to 68.0 per cent for compressed gases. Table I thus indicates that there exists discrimination between products in the rates charged for truck transportation and that this discrimination is of significant magnitude.

THE CONSISTENCY OF PRODUCT RATE DISCRIMINATION

The Southern Motor Carrier Study of 1946. Few of the carriers operating between the Southern Territory and the Middle Atlantic and New England Territory are likely to have been among the carriers operating between Southern Territory and Central Territory. The operating authority of even the larger carriers in the sample is not apt to be broad enough to permit many of them to engage in both traffic movements. Consequently the data are the results of two reasonably separate samples of motor-carrier operations.

The major difficulty in testing the two movements for consistency in the practice of product rate discrimination arises from the fact that the commodity groupings are very broad. "Iron and steel articles," for example, may well include several hundred items each of which is subject to a different rate. The items, included in this group of commodities, which were transported between the Southern Territory and the Middle Atlantic and New England Territory may have differed considerably from the items in the same group transported between the Southern Territory and Central Territory. That the breadth of the commodity grouping is not such that, on this account alone, the relative profitability was very different for particular groups of commodities in the two movements necessarily has to rely upon the hope that the nominal grouping of commodities is, on the whole, economically sound. Furthermore, the different weight-distance "mix" in the two movements may have caused the relative profitability of the commodity groups to be significantly different.

Despite the limitations of the data, a Spearman rank correlation coefficient was computed (excluding those commodity groups whose total weight transported did not exceed 1,000 pounds and excluding also commodities owned by motor-carrier firms but not otherwise identified) to determine to what extent the ranking of commodity groups by relative profitability in the two single-line movements was associated. The correlation coefficient so obtained (+.42) was tested against the null hypothesis of no associa-

[8] *Southern Territory, op. cit.*, Part II, Table No. 16, pp. 40–54, and Table No. 38, pp. 90–101.

[9] Billed weight is the weight indicated on the bill of lading (normally prepared by the shipper) accompanying the article transported. Differences may arise from less than meticulous honesty by the shipper, differences in mechanical scales, or the use of average weights on items whose rates are stated in types of units other than weight (for example, barrels or bushels). Differences in the present study were negligible.

[10] The costs are the "out-of-pocket" or "direct" costs plus the fixed costs allocated on the basis of "out-of-pocket" or "direct" costs. Because of the basis of allocation employed and the small percentage of fixed costs (five per cent in Southern and Central Territories and seven per cent in the Middle Atlantic) neither the rankings in Tables I–II nor the ratios themselves should be greatly affected by their inclusion.

[11] "Out-of-pocket" costs are closely comparable to the economist's "marginal" costs as indicated by the following discussion of "out-of-pocket" costs: "...added increments of output occasion added increments of expense, and ...are directly assigned on a cost-of-service basis to the added traffic occasioning the added expense." [Interstate Commerce Commission, Bureau of Accounts, Cost Finding, and Valuation, *Explanation of the Development of Motor Carrier Costs with Statement as to Their Meaning and Significance*, Statement No. 1-54 (Washington, D.C.: U.S. Government Printing Office, 1954), p. 2.]

tion and found to be significant at the one-percent level. In fact, in less than one instance of two hundred would a value so great as the observed value occur by chance. Similar computations yielded a Spearman rank correlation coefficient of +.36 for the interline movements, which was also significant at the one-percent level.[13] The results indicate that product rate discrimination was practiced *consistently* by the rate-setting units of the motor carriers participating in the two traffic movements (Appendix, Tables I–II).

Western Trunkline Intraterritorial Study. While the traffic and cost studies of the Southern motor carriers were under way, the Office of Defense Transportation requested that a similar study be made in Western Trunkline Territory.[15] Consequently the concepts of costs and revenue and the techniques utilized in this study were, in most cases, identical with those utilized in the study of Southern Motor carriers. The major differences, insofar as the purposes of the present study are concerned, are that the Western Trunkline study was primarily an intraterritorial study, that the test period consisted of one midweek day only, and that a classification of commodities different from that of the Southern motor-carrier study was employed.[14]

In this study 91 carriers were selected for the revenue analysis and 21 of these were selected for the cost study. The carriers were so selected as to achieve a "reasonable cross section" of all motor carriers in Western Trunkline territory.[15]

The data as presented separated the products transported into the products of agriculture, animals and animal products, products of mines, products of forests, manufactures and miscellaneous, except those products in the very broad Interstate Commerce Commission Class 701, and manufactures and miscellaneous, Class 701. Within each product type the data were further sub-divided into single-line and interline, interstate and intra-state, by type of rate, by weight bracket, and by mileage block (100 mile blocks). The revenue and costs were presented for shipments within each mileage block and weight bracket. The revenue and costs were each summed for each product transported by single-line carriers without respect to any of the other characteristics of the traffic. The differences between revenue and costs and the ratios of revenue to cost were then computed for each commodity or commodity group. The results of these computations are presented in Tables IV–VI (Appendix).

One of the major advantages of the Western Trunkline study is that the product classification system used is similar to that used in a series of railroad studies of the "contribution" of various products to the transportation "burden."[16] While the treatment of costs and techniques utilized in the railroad study are not identical with those employed in the Western Trunkline study, they are sufficiently similar to cast some light upon the interesting question of whether or not the types of products which consistently rank high or low with respect to "contribution" in the railroad studies are also those types of products which possess, in the motor-carrier study, correspondingly high or low ratios of revenue to expenses. The major barrier to such a comparison arises from the brevity of the period of the motor-carrier study. The motor-carrier shipments of a particular type of product on a particular day may not be representative of the traffic of this type moving in a more extended period.

[13] Fifty commodity classes were ranked in the single-line movement and fifty-eight in the interline movements. The correlation coefficient was computed by the formula,

$$p = 1 - \frac{6\sum D^2}{N(N^2 - 1)},$$

and its significance tested by

$$t = p\sqrt{\frac{N - 2}{1 - p^2}}.$$

The interline data are not presented herein.

[14] Interstate Commerce Commission, Bureau of Transport Economics and Statistics, *Traffic Flow, Costs, and Rate Structure of Motor Carriers in Western Trunkline Territory,* Parts I and II (Washington, D.C.: U.S. Government Printing Office, 1946).

[15] *Ibid.*, Part I, p. ii; Part II, pp. 1–2.

[16] Western Trunkline Territory consists of, roughly, the states of North Dakota, South Dakota, Nebraska, Kansas, Missouri, Iowa, Minnesota, Illinois, and Wisconsin, plus the portion of Michigan north of Lake Michigan.

[17] Interstate Commerce Commission, Bureau of Accounts, Cost Finding and Valuation, *Distribution of the Rail Contribution by Commodity Groups,* Statement No. 5-57, (Washington, D.C.: U.S. Government Printing Office, 1957). Similar studies exist for the years 1949–1954.

Table III gives an indication of the relative degree of product rate discrimination for broad commodity groups transported by the railroad for selected years from 1939 to 1955 and also for those same commodity groups transported by Western Trunkline motor carriers on Wednesday, February 14, 1945[17] (Table III).

The most obvious fact concerning the railroad data is the consistently disproportionate "contribution" of manufactures and miscellaneous (stressed in all the railroad studies of product "contribution" to "burden"). Almost as consistent (but not nearly so stressed in the railroad studies) has been the low ranking of animals and animal products in these railroad studies. Products of agriculture and products of mines vary from second-highest to second-lowest (in an almost inverse fashion) and products of forests seem to prefer a ranking of about third.

Relative to the railroad data the most striking feature of the motor-carrier data is the high ratio of revenue to cost for the transportation of forestry products. A possible explanation lies in the predominance of the one commodity group which includes lumber, shingles, lath, box materials, veneer, plywood, and so on (Table IV). This commodity group, which is only one subdivision of the entire class of forestry products, alone accounts for more than 80 percent of the motor-carrier traffic in products of forests (by weight and by revenue). It is doubtful that this group of commodities would always or as a rule be so predominant among forestry products transported by motor carriers. The same group of forest products when transported by the railroads tends to have ratios of carload freight revenue to out-of-pocket costs considerably above the average for all forest products transported by rail.[18]

The very low ranking of the mining products in the Western Trunkline study is less easily explained. Again one commodity group, in this case a relatively homogeneous commodity group, predominates (Table IV). Obviously something is unusually askew in the transportation of salt. No motor carrier would transport in sizable volume for very long a commodity which occasioned costs approximately twice as great as revenues yielded. Hence it is safe to assume that the transportation of salt, if as important as indicated by Table IV, is not generally so unprofitable, or if generally so unprofitable is not as important.

These qualifications, if accepted, would tend to lower the relative rank of forest products and to raise the relative rank of mining products in Table III (last column). This would tend to increase the similarities between the last column of Table III and its previous columns and strengthen the conclusion that product rate discrimination is practiced consistently in determining the degree of discrimination to which particular commodities or groups of commodities are subject.

THE RATIONALE OF PRODUCT RATE DISCRIMINATION

The Results thus Far. While the results of the investigation thus far may not establish that the type of product rate discrimination indicated by the data is that to be expected on the basis of economic theory, the results are definitely consistent therewith. A group of profit-maximizing motor carriers selling their services in separate markets will set their rates in the several markets in such a manner as to equate marginal cost and marginal revenue in each market, or, in other words, they will take advantage of the differing elasticities of demand for their services by the different customer groups. In the markets with less elastic demands the ratio of average revenue to marginal revenue and hence to marginal cost will be greater.[19]

Although the markets with the less elastic demand functions need not be those in which the

[17] The motor-carrier ratios are taken from Tables IV–VI (Appendix). The railroad ratios are taken from *Distribution of the Rail Contribution by Commodity Groups*, 1955, *op. cit.*, p. 6, and Interstate Commerce Commission, Bureau of Accounts and Cost Finding, *Distribution of the Rail Overhead Burden by Commodity Groups—1939 & 1947*, Statement No. 2-49 (Washington, D.C.: U.S. Government Printing Office, 1949), p. 9.

[18] See, e.g., *Distribution of the Rail Revenue Contribution by Commodity Groups, op. cit.*, p. 29, Commodity code numbers 411, 413, 415.

[19] Since $MR = AR\ (1 - 1/e)$, $AR/MR = e/(e-1)$. Since in equilibrium $MC = MR$, the ratio of AR/MC will be greatest in the market with the least elastic demand. But only in those cases where marginal costs are constant can one say that TR/TC or TR/VC will always be greatest in the least elastic market. (In this formulation, cases in which e would be less than unity are ruled out because such cases would mean operation in an area of inelasticity, causing marginal revenue to be negative.)

ratio of total revenue to total cost is greater, it can be argued that this is generally the case. The factors which tend to make the estimated demand curve of a particular product-delineated market appear more elastic to the rate setter also tend to make production of transportation services for that market appear less profitable. The demand for the transportation service required for a commodity is likely to be more elastic for each particular group of carriers if the number of such groups is large. At the same time, the transporting of this commodity is not apt to appear very profitable to the rate setter. If private-carrier competition, exempt-carrier competition, contract-carrier competition, railroad competition, or the competition of other groups of common carriers in the transporting of a particular commodity is severe, it would be expected both that the elacticity of demand for the transporting of that commodity would appear relatively high to the rate setter and that the profitability of that market would appear to be relatively low. Similarly, if the shipper of the commodity produces for a highly competitive market or if transportation costs are a large portion of his total costs, the elasticity of his demand for transportation will tend to be high and it will be difficult for the firms from which he purchases transportation to charge rates significantly above the cost of providing transportation service. Thus it is possible to say, in general, that those product-delineated markets for motor-carrier services which possess the smaller demand elasticities will also possess the larger ratios of revenue received from transporting the commodity to the costs thereby incurred. Thus the theory of product rate discrimination provides *an* explanation of some of the disparity in these ratios.

In the finding that product rate discrimination was practiced consistently in the traffic movements South-Central and South-Middle Atlantic and New England, the breadth of the commodity groupings and the different weight-distance "mix" in the two movements decreased the degree of association expected. Even if shipments of the same weight of the same specific items were transported the same distances in the two movements, however, the determinants of the elacticity of demand for transportation may still have differed significantly in the two movements. The elasticity of demand for a given product, for example, may have been considerably different in the areas to which it was transported. Similarly, the cost of transporting the same item in the two movements may have constituted very different proportions of total cost of production, and carriers operating in the two movements may have faced dissimilar competitive conditions.

For the fact that despite these difficulties, as well as others arising from the limitations of the data, the rankings of the ratios in the two movements were associated to an extent greater than could be reasonably attributed to chance, several explanations are possible. One explanation is that the differences in the elasticity of demand for the transportation of particular groups of commodities *in the two movements* were small relative to the differences between the elasticities of demand for the transportation of *different groups of commodities*, and that the rate-setting units reacted rationally to similar situations.

Another possible explanation of a degree of association greater than could reasonably be attributed to chance is that the rate setters were *consistently* in error. Following some non-economic criterion, the rate-setting units may have imposed rates on a given commodity group being transported in one of the movements such that its ratio of revenue to cost was of approximately the same rank as in the other movement. Since every commodity group was transported under various types of rates (class rates, commodity rates, class rate "stops," exception rates, and so on), for various distances, and in various weights of shipments, the rate setting units would have had to be not only consistently in error but *ingeniously* consistently in error in the use of the various types of rates in such a manner as to yield ratios (for a given commodity) of approximately the same rank in the two movements if the rate setters were not guided by elasticity considerations. If the rate setters *were* guided by the elasticities of the demand for transportation of the various commodities, they were rational rate discriminators.

This dismissal of an explanation based on consistent error is, however, perhaps too summary. It is conceivable that the rate setters in one movement may have been able to model their rate structure after an irrational rate structure of the rate setters of the other traffic movement (or both groups may have copied a third irrational rate structure), and that the elasticities of demand for transportation were so similar in the

different movements that a significant degree of association between the ratios of the two traffic movements still existed. Although this leaves unanswered the question of the principles followed by whatever group of rate setters established the original rate structure, it is more than fair to characterize the results attained thus far as consistent with the theory of product rate discrimination as well as other explanations.

If the consistency indicated by the Western Trunkline study and the railroad studies with which it was compared is viewed as the result of profit-maximizing product rate discrimination rather than consistent error, one of the most significant suggestions of the data is that competition may be much less than intensive between the railroads and the large motor carriers (which predominate in both the Southern and Western Trunkline studies). While there can be no doubt that competition between motor carriers and railroads has reduced the degree of product rate discrimination, the fact that commodity groups differ in the relative profitability of transporting them suggests that the over-all competition between the large motor carriers and the railroads is far from vigorous.

The determinants of the elasticity of demand for Motor-carrier services. The primary purpose of further empirical investigation is to establish more conclusively that the product rate discrimination practiced by rate setters has been guided by elasticity considerations, that is, that the product rate discrimination evidenced by the data is the behavior described by the theory of product rate discrimination. While it is possible to argue that consistent error could account for the associations previously found, there is no ground in the "theory of consistent error" for expecting the ratios of revenue to expense to be associated with any of the determinants of the elasticity of demand for transportation. On the other hand, a significant association between any of the determinants of the elasticity of demand for transportation and the ratios of revenue to expense would not only be consistent with the theory of product rate discrimination but would also constitute strong evidence in its behalf. It would then be fair to say that the data indicate that not only *is* there product rate discrimination of significant magnitude and consistency, but also that this kind of product rate discrimination is of a type to be expected on the basis of the theory of product rate discrimination.

Since the demand for transportation is a derived demand, there are four determinants of its elasticity.[20] The first of these is the elasticity of substitution between the services of the motor carriers for whom the rates are set and other factor services which the shipper also uses or may use in the production of his product. No formal empirical examination of the influence of the elasticity of substitution is possible, given the data available. A casual examination of some of the ratios of motor-carrier revenue to motor-carrier expense may, however, yield some indication of the apparent effect of substitutability upon the elasticity of the demand for the services of motor carriers.

The effects of this determinant (if not counteracted by the other determinants of the elasticity of demand for the services of motor carriers) will be most evident in situations in which collusion in the fixing of rates is at a minimum, so that a naturally high technical substitutability between carriers may be assumed to impress the carriers and shippers and be reflected in a low ratio of revenue to expense. The products in whose transport the services of many carriers are apt to be good substitutes may thus have low ratios of revenue to expense.[21]

Collusion between motor carriers is apt to be least in the transporting of agricultural products. Furthermore, in the transporting of most agricultural products the technical substitutability of the services of common carriers of general freight for those of exempt carriers is high. Thus,

[20] See the technical note in the Appendix.

[21] The reader should be cautioned not to infer too much from the absolute values of the ratios. In particular it should not be inferred from a low ratio that this traffic was necessarily accepted for a return less than the relevant marginal cost thereby incurred or that the decision to accept this traffic necessarily decreased the profits of the firm. As return-haul traffic or other traffic that did not require additional trucks its marginal cost may have been very low. Or if actually accepted for a return less than its marginal cost, the traffic may have been accepted to maintain the allegiance of a customer with whom at other times dealings are very lucrative. Moreover, the cost formulae used contain many arbitrary elements (such as the assumption that small shipments are not consolidated in platform handling) and indivisibilities (such as the use of 100 mile blocks). It is not maintained that the theory of product rate discrimination explains all of the variation in these ratios or that these ratios possess a high degree of accuracy.

when common carriers of general freight transport agricultural products the ratios of revenue to expense for these products may be expected to be low.

Despite the wartime shortage of motor carriers, the effect of the high elasticity of substitution between common carriers of general freight and exempt carriers is clearly evident in the data. In the Western Trunkline study agricultural products, as a group, had a ratio of revenue to expense of only 96 per cent (Table III). In Table VII of the Appendix (explained more fully later) Irish potatoes (potatoes other than sweet) and peanuts have two of the lowest ratios of revenue to expense.

Dressed poultry (Table VII) was the sixth most profitable commodity to transport by motor carrier, in contrast to other agricultural products such as Irish potatoes and peanuts. One of the major reasons for the high relative position of dressed poultry may have been that at the time of the study *dressed* poultry was not considered an agricultural product—with the result that only regulated carriers could transport this product.

The second determinant of the elasticity of demand for the services of motor carriers is the elasticity of demand for the product transported. While again the data are inadequate for a formal investigation, an examination of some of the ratios of revenue to expense yields clues concerning the influence of the elasticity of the demand for the product upon the elasticity of demand for the services of motor carriers. The commodity groups can be examined to see if products the demand for which might be generally considered less elastic also yield high ratios of expense and vice versa.

There may be general agreement that at the time of the studies the demand for such products as ammunition and ordnance was relatively less elastic. Concerning a larger selection of commodities, however, there may be far from unanimous agreement. Perhaps explosives and manufactured products of tobacco should be considered additional possibilities. Ammunition and ordnance were consistently very profitable items to transport in the 1946 Southern motor-carrier study, but explosives in Table VII are only tenth in order of relative profitability. The quantity of traffic may explain the ratio found for explosives. On the test day only 3,724 pounds of explosives were shipped.

In both studies previously discussed the ratio of revenue to expense for tobacco products was not, consistently, outstandingly high. Furthermore, in both studies the volume of tobacco products transported was considerable. In addition (Table VII), the proportion of transport cost to total cost of production was lowest, of all commodity groups, for manufactured products of tobacco. The answer may lie in an unusual ability to substitute the services of one group of carriers for those of another or a relatively large elasticity of supply of the other factors of production.

An interesting example of the influence of product demand elasticity upon the elasticity of demand for the services of motor carriers is afforded by a comparison of the ratio of wood or denatured alcohol (Table VII) with alcoholic liquors (Tables I–II). While the cost of transporting the two commodity groups could hardly be greatly dissimilar, the elasticity of the demands for these products may be quite different. Consequently, it is not surprising that the relative profitability of transporting alcoholic liquors is much greater than that of denatured alcohol. A similar difference of product demand elasticities may partially account for the very different ratios of beverages and paints (Table VII).

The third determinant of the elasticity of demand for motor-carrier services is the proportion of the price of such services to the price of the product transported. A more formal investigation of this determinant is possible if the prices of the commodity groups are known. Table VII provides such information, but before any attempt is made to find in the data the degree of association between the ratio of transport cost to the value of the product and the ratio of revenue to expense, the difficulties, both theoretical and practical, of such an undertaking should be clearly understood. To prevent confusion in the following discussion, the ratio of motor-carrier revenue to motor-carrier expense will be referred to as the *revenue-cost* ratio and the ratio of transport cost to the value of the product as the *transport cost-product value* ratio.

Most of the theoretical difficulties center about the fact that the third determinant is, of course, only one determinant of four. If the net effect of all other determinants is opposed to, and stronger than, the effect of the third de-

terminant, there will be no significant association (in the direction suggested by the determinant) between the revenue-cost ratios and the determinant. If the third determinant has a greater influence than the net opposing effect of the other determinants, or if the net effect of the other determinants is in the same direction as that of the third determinant, there may be a significant association between the single determinant and the revenue-cost ratios. Even if the net effect of the other determinants is in the same direction (or, if opposed, of lesser strength than) the influence of the third determinant, however, a rank correlation of the revenue-cost ratios with this determinant will be adversely affected by the failure of the other determinants to render their aid (or to oppose their lesser strength) in proportion to the relative size of the single determinant.

Furthermore, if the special conditions posed by Joan Robinson are met,[23] the elasticity of the demand for the services of motor carriers will be either unaffected by changes in the ratio of the price of the services of motor carriers to the price of the product, or affected in the direction opposite that normally expected.

The theoretical difficulties are thus formidable in any comparison of the revenue-cost ratios with the third determinant of the elasticity of demand for the services of motor carriers, the transport cost-product value ratio. While the theory of product rate discrimination provides reason for thinking that there *may* be a significant association between the revenue-cost ratios and this determinant (and the "theory of consistent error" does not) the theory of product rate discrimination does not provide reason for thinking that there *must* be such an association. Consequently, the level of significance in an empirical investigation of the association must be relatively low. A level of significance of .05 per cent was chosen for the empirical investigation of this determinant.

The practical difficulties center about two problems. First of all, the only data available on the prices of the various commodities transported have serious shortcomings, and, secondly, the identification of commodities is again hampered by the very broad commodity groups utilized. The second problem was partially solved by selecting from Tables IV–VI (the data derived from the Western Trunkline study) only the commodity groups identified by a single class number. The thirty such commodity groups are shown in Table VII. The selection of only these commodity groups reduced the extent of the nonhomogeneity but by no means eliminated it.

The prices of the products in the thirty commodity groups of Table VII were approximated by the "destination values" of these groups at wholesale prices. These values were taken from a railroad study of 1946 data[25] and may not be too reliable as indicators of the price of commodities transported by motor trucks in Western Trunkline Territory on February 14, 1945. As indicators of the *relative* cost of production of the commodity groups selected for study, the data are, perhaps, sufficiently accurate.[24]

A Spearman rank correlation of the revenue-cost ratios with the transport cost-product value ratios yielded a correlation coefficient (−.42) which was easily significant at the .05 level of significance. A value so great could occur by chance slightly more frequently than once in a hundred instances. Thus the data indicate that not only does product rate discrimination *exist*, and not only is it of *significant magnitude*, and *practiced consistently*, but also that the product rate discrimination practiced *is of a type to be expected on the basis of the theory of product rate discrimination*. Since the "theory of consistent error" provides no basis for expecting the association, and since it also provides no basis for expecting low revenue-cost ratios on exempt agricultural commodities or high revenue-cost ratios on such products as ammunition, ord-

[23] See the technical note in the Appendix.

[25] Interstate Commerce Commission, Bureau of Transport Economics, and Statistics, *Freight Revenue and Wholesale Value at Destination of Commodities Transported on Class I Steam Railways, 1946*, Statement No. 4823 (Washington, D.C.: U.S. Government Printing Office, 1948).

[24] The wholesale prices utilized were sometimes on an f.o.b. origin basis and sometimes on an f.o.b. destination basis. When only the former basis was available, *railroad* freight revenue was added in order to get the data on an f.o.b. destination basis. The wholesale prices are those of the manufacturer or other primary seller. Where a commodity class included several commodity items the prices were separately computed for the major commodity items, and the average price of the entire class determined (weighted by the railroad tonnage transported).

nance, etc., the "theory of consistent error" may be safely discarded.

The fourth determinant of the elasticity of the demand for the services of motor carriers is the elasticity of supply of factors of production other than the services of motor carriers. Few, if any, specific instances of the probable influence of this determinant can be pointed out in the data. To a large extent the lack of such instances arises from a lack of knowledge of the incidence of monopsony in the economy. There are no products among those listed of which it can be said with assurance that the typical producer's purchases of the other factors of production exert a significant influence upon the prices of these factors. If no such influence is exerted this determinant would not affect the elasticity of demand for motor-carrier services.

CONCLUSIONS

To the author's knowledge there have been no previous empirical studies in motor trucking of the influence of the value-of-service principle upon product rate differentials. Consequently the results of this study can not be compared with the results of others. Furthermore, in addition to the deficiencies noted in the data, attention should be called to the fact that the model tested assumes a high degree of rationality upon the part of rate setters. Obviously the rate setters often lack the necessary information to follow the model precisely, and even if they possessed such information they would be hampered by the regulatory restrictions under which they operate. Over time rationality may emerge in the Schumpeterian sense, but rate setters are obviously not short-run Veblenian "lightning calculators." Consequently, the results of the study should be viewed as *consistent* with the model tested and tending to support it. It is not maintained that the study constitutes a conclusive verification of the model.

APPENDIX

Technical note. Following Marshall's mathematical note [Alfred Marshall, *Principles of Economics*, eighth edition (London: Macmillan, 1952), pp. 701–702] we assume that there are two factors of production which are combined in fixed proportions to produce the product and that one of the two factors is the services of motor carriers. Let:

(1) q = output of the product

(2) $F(q)$ = demand for the product

(3) $\phi_2(q)$ = supply of the other factor of production

(4) m = elasticity of demand for motor-carrier services. Then,

(5) $f_1(q) = F(q) - \phi_2(q)$ = demand for motor-carrier services, and

$$m = f_1(q) \cdot \frac{\frac{1}{f_1'(q)}}{q} \quad \text{or} \quad m = \frac{q f_1'(q)^{-1}}{f_1(q)}.$$

Substituting (5),

$$m = \frac{1}{\frac{qF'(q)}{F(q)} \cdot \frac{F(q)}{f_1(q)} - \frac{q\phi_2'(q)}{f_1(q)}}$$

The first expression of the denominator of the last equation is the inverse of the elasticity of demand for the product. The second expression is the inverse of the ratio of the price of motor-carrier services to the price of the product. The third expression is equal to the inverse of the elasticity of supply of the other factor multiplied by the ratio of the supply price of the other factor to the demand price of motor-carrier services. If the elasticity of supply of the other factors is infinite,

$$m = \frac{F(q)}{qF'(q)} \cdot \frac{f_1(q)}{F(q)},$$

or the product of elasticity of demand for the commodity and the ratio of the price of motor-carrier services to the price of the commodity.

Joan Robinson (*op. cit.*, pp. 256–262) has worked out the effect of substitution between factors upon the elasticity of derived demand. The degree to which substitution is possible is expressed by the *elasticity of substitution*. When this elasticity is less than the elasticity of demand for the product, Marshall's third determinant of the elasticity of derived demand is correct. When the two elasticities (product demand and substitution) are equal, the elasticity of demand for motor-carrier services is independent of the proportion in which the factors are employed. When the elasticity of substitution is greater than the elasticity of demand for the product, the elasticity of demand for motor-carrier services varies *inversely* with the ratio of the cost of motor-carrier services (to the shipper) to the price of the product.

When the price of a factor decreases, for ex-

ample, this has two effects upon the quantity of that factor that is utilized in production. Since costs have been lowered, the output of the product and hence the use of all factors will tend to increase. But the decrease in price of the one factor also means that it will tend to be substituted for other factors. The extent of the increase in the use of the factor directly attributable to the decrease in its price (not considering substitution) depends upon the proportion of total cost represented by this factor and the elasticity of demand for the product. But if this factor can also be easily substituted for other factors, a decrease in its price will cause a proportionately large increase in its use even though its cost is a small proportion of total cost.

The fourth determinant of the elasticity of demand for the services of motor carriers still holds, when the production coefficients are permitted to vary, in all instances except those in which the elasticity of substitution is equal to the elasticity of demand for the product. When the two elasticities are equal, the elasticity of demand for motor-carrier services is independent of the elasticity of supply of the other factors of production (since the amount of these factors utilized will not be altered when the price of motor-carrier service is changed).

TABLE I

INTERSTATE SINGLE-LINE SHIPMENTS OF SELECTED COMMODITIES BETWEEN SOUTHERN TERRITORY AND MIDDLE ATLANTIC AND NEW ENGLAND TERRITORY, RANKED BY PROPORTION OF REVENUE TO EXPENSE

Commodity (1)	Actual Weight (lbs) (2)	Revenue (cents) (3)	Expenses (cents) (4)	Col. 3–Col. 4 (5)	Col. 3 ÷ Col. 4 (Percent) (6)	Rank (7)
Ammunition	109,139	100,032	41,900	58,132	238.7	1
Ordnance	6,762	11,733	5,891	5,842	199.2	2
Liquors, beverage	15,018	28,260	16,787	11,473	168.3	3
Lighting fixtures or parts	6,557	12,384	7,446	4,938	166.3	4
Aluminum & articles	13,120	21,544	13,828	7,716	155.8	5
Boots and Shoes	108,235	179,711	116,486	63,225	154.3	6
Dairy products	47,164	60,936	41,212	19,724	147.9	7
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Foodstuffs, not canned	233,481	251,131	200,363	50,768	125.3	23
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Iron & steel articles	182,595	174,049	148,179	25,870	117.5	30
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Manufactured tobacco	95,561	73,986	76,752	2,766	96.4	50
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Fruits, veg., fresh	2,730	3,159	3,586	427	88.1	57
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Gases, compressed	1,120	638	938	300	68.0	68

Source: Derived from Interstate Commerce Commission, Bureau of Transport Economics and Statistics, *Interterritorial Traffic Flow, Costs, And Rate Structure of Motor Carriers in Southern Territory*, Part II (Washington, D.C.: November, 1946), Table No. 16, Cols. 3, 5, and 6, pp. 40-54. Only sample lines of Table I are reproduced herein.

TABLE II

INTERSTATE SINGLE-LINE SHIPMENTS OF SELECTED COMMODITIES BETWEEN SOUTHERN TERRITORY AND CENTRAL TERRITORY, RANKED BY PROPORTION OF REVENUE TO EXPENSE

Commodity (1)	Actual Weight (lbs) (2)	Revenue (cents) (3)	Expenses (cents) (4)	Col. 3-Col. 4 (5)	Col. 3 ÷ Col. 4 (percent) (6)	Rank (7)
Ordnance	28,841	31,372	13,538	17,834	231.7	1
Animal Prod., edible	40,042	51,451	24,992	26,549	205.9	2
Electrical equipment	86,780	78,213	40,173	38,040	194.7	3
Furniture & parts	3,382	5,336	2,750	2,586	194.0	4
Airplanes or parts	1,346	2,638	1,521	1,117	173.4	5
Ammunition	28,385	27,065	15,858	11,207	170.7	6
Bakery goods	27,778	35,747	20,925	14,822	170.1	7
Vehicle parts	197,446	155,960	102,096	53,864	152.8	8
Dairy products	25,790	18,703	12,289	6,419	152.2	9
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Liquors, beverage	35,080	22,240	15,610	6,630	142.5	16
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Gases, compressed	300	339	274	65	123.7	29
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Manufactured tobacco	2,534	3,527	2,904	623	121.5	32
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Iron & steel articles	76,153	56,242	49,939	6,303	112.6	40
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
Foodstuffs, not canned	81,817	55,956	55,558	398	100.7	56
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.

Source: Derived from same source as Table I, *Supra*, Table No. 28, Cols. 2, 5, and 6, pp. 90-101. Only sample lines of Table II are reproduced herein.

TABLE III

RATIO (PER CENT) OF REVENUE TO COSTS

Commodity Group	Rlrd. Ratio of Carload Revenue to Out-of-Pocket Costs						Motor-Carrier Ratio of Single-Line Revenue to Total Cost in Western Trunkline Territory February 14, 1945
	1939	1947	1949	1951	1953	1955	
Products of Agriculture	135	121	142	134	128	130	96.0
Animals and Products	125	106	128	117	115	118	94.3
Products of Mines	178	132	129	127	121	122	85.8
Products of Forests	153	127	135	129	128	131	116.3
Manufactures & Miscellaneous	203	165	192	180	183	176	111.2

TABLE IV

SINGLE-LINE SHIPMENTS OF ANIMALS AND ANIMAL PRODUCTS, PRODUCTS OF MINES, PRODUCTS OF AGRICULTURE, AND PRODUCTS OF FORESTS IN WESTERN TRUNKLINE TERRITORY ON FEB. 14, 1945

Commodity & I.C.C. Class No. (1)	Actual Wt. (lbs) (2)	Revenue (cents) (3)	Expenses (cents) (4)	Col. 3–Col. 4 (5)	Col. 3 ÷ Col. 4 (percent) (6)
ANIMALS AND ANIMAL PRODUCTS					
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Poultry, dressed (*No. 231*)	77,590	34,274	26,920	5,354	119.9
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Leather (*No. 271*)	6,023	3,706	3,870	−164	95.8
Totals	1,720,576	770,658	817,331	−46,673	94.3
PRODUCT OF MINES					
Stone, rough, N. O. S.; Stone, finished	3,130	1,421	1,609	−188	88.3
Salt (*No. 380*)	61,613	18,422	36,218	−17,796	50.9
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Totals	129,303	62,456	72,790	−10,334	85.8
PRODUCTS OF AGRICULTURE					
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Apples, fresh; bananas, berries, fresh; grapes	53,064	28,574	22,887	5,687	124.8
Potatoes, other than sweet (*No. 180*)	587,230	171,224	220,873	−49,649	77.5
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Peanuts (*No. 161*)	27,334	14,594	15,672	−1,078	93.1
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Totals	1,297,752	542,287	564,999	−22,712	96.0
PRODUCTS OF FORESTS					
Lumber, shingles, and lath; box, crate, and cooperage mat.	119,359	66,914	55,602	11,312	120.3
Rosin: turpentine (*Nos. 440, 441*)	14,531	6,624	7,014	−390	94.4
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Totals	143,627	80,499	60,201	11,298	116.3

Source: Derived from Interstate Commerce Commission, Bureau of Transport Economics and Statistics, *Traffic Flow, Costs, and Rate Structure of Motor Carriers in Western Trunkline Territory*, Part II (Washington, D.C.: June, 1946), Tables No. 1. 4. Cols. 3. 5, and 6, pp. 3-13. Only sample lines of Table IV are reproduced herein.

TABLE V

SINGLE-LINE SHIPMENTS OF MANUFACTURES AND MISCELLANEOUS, EXCEPT I.C.C. CLASS NO. 701, IN WESTERN TRUNKLINE TERRITORY ON FEB. 14, 1945

Commodity & I.C.C. Class No. (1)	Actual Wt. (lbs) (2)	Revenue (cents) (3)	Expenses (cents) (4)	Col. 3–Col. 4 (5)	Col. 3 ÷ Col. 4 (percent) (6)
Pet. oils, refined and all other gasolines; fuel, road	69,592	32,845	34,352	−1,507	95.6
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Furniture, other than metal (*No. 611*)	50,487	48,601	27,641	29,960	175.8
Beverages (*No. 620*)	314,289	139,710	116,837	22,873	119.6
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Newsprint paper, printing paper, N.O.S. (*Nos. 650, 651*)	80,798	28,341	36,066	−7,736	78.6
Alcohol, denatured or wood (*No. 660*)	1,703	1,198	1,233	35	97.2
Explosives, N.O.S. (*No. 662*)	3,724	4,166	3,620	546	115.1
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Tobacco, manufactured products (*No. 690*)	18,333	11,484	10,615	869	108.2
Paints in oil and varnishes (*No. 691*)	186,957	97,034	94,589	2,445	102.6
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Totals	4,223,145	2,310,426	2,123,920	186,506	108.8

Source: Derived from same source as Table IV, *Supra*, Table No. V, pp. 13-30. Only sample lines of Table V are reproduced herein.

TABLE VI

SINGLE-LINE SHIPMENTS OF ITEMS OF I.C.C. CLASS NO. 701 IN WESTERN TRUNKLINE TERRITORY ON FEBRUARY 14, 1945

Commodity (1)	Actual Wt. (lbs) (2)	Revenue (cents) (3)	Expenses (cents) (4)	Col. 3–Col. 4 (5)	Col. 3 ÷ Col. 4 (percent) (6)
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Ordnance (other than ammunition)	106,802	93,733	54,597	39,136	171.7
Cloth and fabric (except cotton), textiles, wool rayon, yarn	223,384	205,838	132,341	73,497	155.5
Drugs, medicines or toilet articles	138,211	112,691	100,217	12,474	112.4
Household furnishings	54,047	47,497	37,646	9,851	126.2
Glassware (except bottles, jars and jelly glasses	63,347	36,918	36,588	330	100.9
Paints, paint material or putty	173,877	100,700	89,155	11,545	112.9
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
Totals	5,423,064	3,520,828	3,118,673	402,155	112.9
All Mfg. & Misc. (*Tables* V & VI)	9,646,199	5,831,254	5,242,593	588,661	111.2

Source: Derived from same source as Table IV, *Supra*, Table No. VI, pp. 31-46, Only sample lines of Table VI of the present study are reproduced herein.

TABLE VII

MOTOR-CARRIER REVENUE FROM THE TRANSPORTATION OF SELECTED COMMODITY GROUPS AND THEIR VALUE AT DESTINATION

Commodity and I.C.C. class number (1)	Ratio of revenue to expense (2)	Revenue per ton (3)	Value per ton (4)	Col. 3 ÷ Col. 4 (percent) (5)
Furniture, other than metal (611)	175.8	19.252	749.28	2.589
Furniture, metal (610)	164.1	20.806	492.60	4.224
Machinery and boilers (530)	135.2	16.382	731.12	2.241
Bagging and bags, burlap, gunny or jute (671)	121.2	15.191	268.26	5.663
Cotton cloth and cotton fabrics, N.O.S. (670)	120.7	14.622	1445.99	1.011
Poultry, dressed (231)	119.9	8.835	718.00	1.230
Automobiles and auto trucks, K.D., and parts, N.O.S. (592)	119.6	15.495	603.19	2.669
Beverages (620)	119.6	8.891	226.30	3.929
Agricultural implements and parts, N.O.S. (680)	116.3	12.192	388.72	3.138
Explosives, N.O.S. (662)	116.1	22.374	475.72	4.708
Table syrups and edible molasses (471)	114.2	8.548	106.79	8.004
Building woodwork (millwork) (697)	112.5	10.634	287.49	4.130
Copper, brass, and bronze: bar, sheet, and pipe (521)	112.1	10.822	507.23	2.134
Glass, flat, other than plate (699)	110.1	11.380	113.09	10.063
Glass: bottles, jars, and jelly glasses (700)	109.5	12.196	79.18	15.403
Tobacco, manufactured products (690)	108.2	12.528	2824.81	0.443
Automobile and auto truck tires (593)	106.4	14.487	1038.79	1.395
Fertilizers, N.O.S. (640)	106.3	14.519	33.61	43.198
Lubricating oils and greases (452)	104.3	8.891	64.29	13.829
Paints in oil and varnishes (691)	102.6	10.380	361.15	2.874
Cement, natural or portland (bldg.) (540)	99.5	12.543	13.96	89.914
Soap and washing compounds (798)	99.4	11.984	270.88	4.424
Canned food products, N.O.S. (680)	97.5	9.963	202.92	4.910
Alcohol, denatured or wood (660)	97.2	14.061	186.10	7.656
Leather (271)	95.8	12.304	1066.00	1.154
Paper bags and wrapping paper (694)	94.8	8.613	205.69	4.167
Peanuts (161)	93.1	10.678	231.00	4.254
Potatoes, other than sweet (130)	77.5	6.832	63.14	9.237
Iron and steel: nails and wire, not woven (512)	72.0	4.679	81.10	5.769
Salt (380)	50.9	5.980	13.65	43.177

Source: Columns (1), (2), and (3) are from Tables IV–VI, *supra*. Column (4) was derived from Interstate Commerce Commission, Bureau of Transport Economics and Statistics, *Freight Revenue and Wholesale Value at Destination of Commodities Transported on class I Steam Railways, 1948*, Statement No. 4382 (Washington, D.C.: July 1948), pp. 8–11.

PRICE DISCRIMINATION IN LAW AND ECONOMICS

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In considering the subject of illegal price discrimination, the economist must first of all grasp firmly the essential fact that what he has to deal with is not the phenomenon with which he has become familiar under the title of price discrimination in economic theory. Similarly, if the lawyer (or other non-economist) is to understand the economic-theoretical treatment of price discrimination, he must not suppose that the term refers to the legal offense. For these reasons, and also because a comparison of the two concepts clarifies the nature of each, this study will begin with a brief statement of their differences and similarities.

Discussions of the law concerning price discrimination customarily use the term in at least two senses: first, to denote an illegal price relation; and second, to denote a price relation illegal unless justified in certain prescribed ways. Thus in the second sense a price relation may be discriminatory and yet legal—for example, because it reflects a difference in the cost of serving different buyers. It is the first sense of the legal term which will be used here, since the focus of the study is not terminology as such but rather an economic critique of the actual prohibition embodied in the Robinson-Patman Act.[1] Only incidental mention will be made of the regulation of price relations under the "public utility" type of statute, e.g., the Federal regulation of railroad rates.[2]

In the second section of the study, it will be argued that there is no reason for any one to mourn the failure of the law to conform to the economic concept, because the latter does not necessarily refer to an economic evil, and because those cases of economic price discrimination which are undesirable (and yet fall outside the law) are not amenable to regulation under the antitrust laws. Nevertheless, as will be explained in the third section, there seems to be a good economic case for an antidiscrimination policy broadly similar to that now embodied in the law. This economic rationale suggests some changes in present legislation as well as offering answers to some perplexing questions of interpretation. These points are taken up in the fourth and final section.

I

In both law and economics, the term price discrimination is applied to the practice, carried on by a single seller, of charging different prices to different buyers for the same product, where the price difference is not equal to the difference (if any) in the specific cost of serving them. ("Specific cost" is intended to refer to costs directly attributable to a given sale, as opposed to general overhead expenses.) However, this application is too narrow to define the economic term; and it is also much too broad to define the legal one. The major difference between the two terms is this: *That the legal term includes only such price relations as have a certain prescribed adverse effect on competition*, whereas the economic term is applied regardless of this sort of effect.

In the words of the Act itself, it applies only to those price relations whose effect

> may be substantially to lessen competition or tend to create a monopoly in any line of commerce, or to injure, destroy, or prevent competition with any person who either grants or knowingly receives the benefit of such discrimination, or with customers of either of them.[3]

Two main types of behavior are involved: (1) price policy with adverse affects on a competitor of the discriminator himself—e.g., local price-cutting in the markets served by such a competitor; (2) price policy with adverse effects on a competitor of a preferred customer.[4] "Type 2"

[1] Public Law No. 692, approved June 19, 1936 (2d. Sess., 74th Cong., U. S. Stat. L., vol. 49, p. 1526).

[2] Originally provided for in The Act to Regulate Commerce of February 4, 1887 (24 Stat. 379).

[3] Section 2(a) of the Robinson-Patman Act.

[4] I do not discuss the use of the law against price discrimination to outlaw certain price structures on the ground that they imply *collective price-fixing*, and that this implication constitutes an injury to competition. The issues involved here hinge not on the price relationships themselves but on the nature of collusive pricing.

discrimination was the special focus of the Robinson-Patman Act, whereas "type 1" discrimination is generally conceded to have been the target of Section 2 of the original Clayton Act.

Other important differences between the legal and the economic concepts are: (1) the legal category, unlike the economic, excludes price relations brought about in order to meet a competitor's equally attractive offer; (2) the legal category refers *only* to *differences* in price charged for (substantially) the *same* product.[5] The economic concept—though quite often discussed within the narrower definition—extends logically to include price *equalities*, as well as relations among prices for *different* goods, when these do not reflect cost differences.[6] It is for this reason that the application stated in the beginning of the paragraph was said to be too narrow for the economic term.

II

In the present section, it will be argued that there is no reason to hold that the economic and legal concepts of price discrimination *should* be identical. Unless otherwise noted, the term price discrimination will in this section denote the theoretical economic category. In summary, it will be pointed out that there are many instances where the results of discrimination are economically preferable to those of any feasible system of uniform pricing; hence, to make economic price discrimination a legal offense would be misguided in theory and very possibly unfortunate in its overall economic effect. Except as otherwise noted, the criterion of economic "preferability" used here is that of the "new welfare economics"; that is, situation A will be regarded as "better" than situation B if the gains of those who benefit from the change from B to A are more than sufficient to compensate those who lose.[7]

At the outset it may be well to take up briefly an argument sometimes still heard which condemns price discrimination because it is a "sign of monopoly." Now it is certainly true that with pure competitive equilibrium in every market, prices of all products, including those sold by the same firm, would be related in exactly the same ratio as the producing firms' average (and marginal) costs. Indeed, all the prices would be necessarily equal to the corresponding average (and marginal) costs. (The only possible exceptions would be instances of true joint production.) It is also to be noted that at the pure competitive equilibrium, which necessarily occurs at the low point of the firm cost curve, differential pricing could not possibly result in a reduction in average costs (through expanding output). In any market that is served at all by a pure competitive firm, there is no problem of inadequate demand at a uniform price equal to average total costs, because the definition of pure competition requires that demand for each product be (from the point of view of the firm) infinite at the going market price.[8]

It follows that the existence, at equilibrium, of price differences not corresponding to differences in average costs does indicate the presence of monopoly, *in the sense of a departure from pure competition* (except in cases of joint production). But the monopoly which can be said to be present here has been well described as an analytical rather than a normative concept;[9] it is by no means necessarily an economic evil, in the sense that its removal would always represent a net gain to the community. For example, there are many instances in which the demand for a given product is small relative to the scale of output necessary for its efficient pro-

[5] In connection with the legal issues involved in the interpretation of the Act, readers should consult the following sources: (1) *Report of the Attorney-General's National Committee to Study the Antitrust Laws* (Washington, D.C.: U. S. Government Printing Office, 1955); (2) *How to Comply With the Robinson-Patman Act: 1957 Antitrust Law Symposium* (Chicago, Ill.: Commerce Clearing House, 1957); (3) Wright Patman, *The Robinson-Patman Act* (New York: Ronald Press, 1938).

[6] One example of an economic discussion utilizing the broader meaning is David G. Tyndall, "The Relative Merits of Average Cost Pricing, Marginal Cost Pricing, and Price Discrimination," *Quarterly Journal of Economics*, August 1951.

[7] On the "new welfare economics" see, for example, Kenneth E. Boulding's "Welfare Economics," in *A Survey of Contemporary Economics*, II, Bernard F. Haley, ed. (Homewood, Ill.: Richard D. Irwin, 1952) and the primary sources there cited.

[8] On this point, see Donald H. Wallace, "Joint and Overhead Cost and Railway Rate Policy," *Quarterly Journal of Economics*, August 1934, p. 587n.

[9] Edward S. Mason, "Monopoly in Law and Economics," 47 *Yale Law Journal* 34, 37 (1937).

duction; such products frequently cannot be marketed at all under conditions of pure competition. Yet the fact that these products are in fact sold at prices covering costs can (in general) be taken to prove that they are worth more to their buyers than the market value of the alternatives sacrificed to produce them. If, then, monopoly is not necessarily evil, one cannot condemn a given price policy simply on the ground that it indicates the existence of monopoly.

It appears to be generally agreed that uniform average-cost pricing is an appropriate norm for price policy only where consistent with the equality of price and marginal cost—that is, where demand is such that price, average costs and marginal costs can coincide at the low point of the firm cost curve. (Even here, an exception is made in the case of true joint production, where technical conditions prevent independent adjustment of supply in each separate market.)[10] Where this demand condition is fulfilled, a uniform average-cost price is also equal to marginal cost, and output is at an optimum level in the "welfare" sense—i.e., either any more or any less than this output would involve losses for which the accompanying gains would be insufficient to compensate. (It is, of course, true that the "welfare" optimality of the output at which price equals marginal cost in any given line of production depends upon the fulfillment of this output criterion in other lines as well; however, since we are here concerned with price structures in general, it appears appropriate to use the criterion in its unqualified form.) Where this demand condition is not fulfilled, uniform average-cost pricing does not bring about this optimum level of output. Moreover, where discrimination is *perfect*—e.g., where a different price can be charged for each unit of product—the equilibrium output of the discriminating monopolistic firm is always just equal to the "welfare" optimum, no matter what the behavior of the cost curve.

When average costs are falling in the salable range of output, charging a uniform price equal to marginal cost will, of course, result in total revenues insufficient to cover total costs. Furthermore, there are some products which cannot be profitably produced at any uniform price, but can yield adequate revenues with discrimination. There is probably still some support among economists for charging uniform prices equal to marginal cost in these two instances and making up the deficits from general taxation; on the whole, however, it appears far more reasonable to hold that the consumers of a given product should, as a group, pay its total costs. From the point of view of consumer choice, rational calculation requires that all, and not merely some, costs be taken into account when income is allocated among various lines of expenditure;[11] from the point of view of investment allocation, it is necessary to have market criteria not merely for those items of expenditure which are attributable to each unitary purchase, but also for those "overhead" items which cannot be attributed to any single unit of product. These criteria can be obtained only through price policies which allow all costs to be met by revenues if demand for the product is adequate.

In those cases where it is necessary to meet the costs of an otherwise unprofitable product,[12] many would agree that price discrimination is economically desirable.[13] Moreover, because the usual analysis of the firm postulates one product sold at a uniform price, it is not unlikely that the practical importance of this theoretical case has been underestimated.[14] Certainly it seems that discriminatory pricing (in the economic sense) occurs in a great many instances where excessive profits do not; and this would strongly suggest that in these many instances discrimination is necessary to support the enterprise at a "normal" profit level. A similar justification for discrimination is found in the case of true joint supply, which, as Wallace has pointed out, is also far more widespread than the usual theoretical treatment of the firm would indicate. "Time jointness"—the inability to make needed productive capacity available to meet peak demands without also making it available at other

[10] For example, Wallace, *op. cit.*, p. 585.

[11] On this point, see, for example, Tyndall, *op. cit.*, p. 345.

[12] The ingenious proposal for special taxation to finance such products, advanced by Tyndall in the above-cited article, appears to this writer to have decisive drawbacks.

[13] E.g., Joan Robinson, *The Economics of Imperfect Competition* (London: Macmillan, 1938), pp. 203–204.

[14] On this point, see E. W. Clemens, "Price Discrimination in Decreasing Cost Industries," *American Economic Review*, December 1941, p. 802.

times—appears to be typical of industrial production: "a universal characteristic in industry."[18]

Even where some output is profitable at a uniform price, price discrimination generally results in an output nearer to the "welfare" optimum level than does simple monopoly. (The term "monopoly" is here used in its strict theoretical sense, and refers to any departure from pure competition. The widespread applicablity of this theoretical case should be obvious.) Thus Mrs. Robinson concludes that "From one point of view [i.e., that of comparing actual output with the "welfare" optimum] price discrimination must be held to be superior to simple monopoly in all those cases in which it leads to an increase of output, and . . . these cases are likely to be the more common."[19] This conclusion is qualified by reference to the fact that "price discrimination [if it is not *perfect*, and hence does not result in the sale of each unit of product to the buyer willing to pay most for it] leads to a maldistribution of resources as between different uses." The weight of this objection depends on the extent to which the purchases of some buyers are curtailed as compared with what they would be without discrimination. If it is accepted that the earning of revenues sufficient to cover total costs is an essential characteristic of an economically desirable price policy, then the objection obviously does not apply where only normal profits are being earned.

Under this condition of financial self-sufficiency, the "welfare" rule for price and output must of course be qualified: it is no longer enough simply to specify (with the usual qualifications) that price should be equal to marginal cost. The new pricing rule would seem to specify a price structure such that output would be as close to the welfare optimum as possible within the condition of self-sufficiency. The optimum output would then be the maximum self-financing output of which no unit is sold at less than marginal cost. As compared with simple monopoly output, discriminatory output would tend to be nearer to this optimum as well as to that specified by the "welfare" rule.

In accordance with the "self-financing" principle, it is moreover desirable to improve pricing techniques in order to enable *each* customer *group* sharing a given item of overhead to be charged with this cost *as a group* (but not necessarily in uniform pro rata shares). This kind of pricing problem occurs, for example, in the determination of rates for individual segments of a transportation route system, and in the proper allocation of multi-route overhead to the traffic on each route.

These pricing refinements appear to afford far greater oportunity for the improvement of resource allocation than attempts to make individual prices equal to marginal costs (in the sense of added cost attributable to the final unit of output), for the reason that the overwhelming majority of cost decisions affect *many* units of output. Because cost decisions are very largely matters of continuous testing and revision, and necessitate constant reference to actual revenues to determine whether existing rates of expenditure are justified, it is not in general desirable to fix the price at the unitary marginal cost level even after all non-unitary cost decisions have been made for a given time-period. Here again, a uniform pricing requirement would in most cases make it impossible to arrive at a price structure permitting maximum service to the public without internal or external subsidization.

III

There is nevertheless a good economic case for the prohibition of price discrimination in a sense essentially similar to that now employed in law. *This* kind of price discrimination is entirely distinct from the economic-theoretical category dealt with in the preceding section. Whereas the latter is a means of maximizing profit by charging the monopoly price in each of several markets considered separately, the practice to be considered here is a *means of creating a new profit opportunity* by reducing competition in some market served by the beneficiary of discrimination. It is not a matter of exploiting existing demands to the fullest possible extent, but of creating a new demand situation through the exclusion of competitors. This sort of discrimination may properly be called *restrictive* discrimination, and may be defined as follows: the maintenance of a pattern of prices (or other aspects of business policy) which differs from that which would be adopted under "normal" profit-maximization, with the result that competition in some market is restricted, and an

[18] Wallace, *op. cit.*, p. 592n.
[19] Robinson, *op. cit.*, p. 206.

opportunity for additional profit in this market obtained either for the discriminator himself or for favored customers or suppliers. The *immediate* effect of the discrimination—without taking into account compensation from favored parties, or increased profits after a competitor has been quashed—is a *loss* for the discriminator as compared with what he could have made at a non-discriminatory price.

For example, where two or more customers of the same supplier are in competition (as sellers) among themselves, the supplier may be in a position to confer upon a favored customer a competitive advantage *worth more to that customer than its cost to the original seller* in terms of foregone profit. This can occur when the product of the seller makes up an appreciable proportion of the costs or resale trade of the disfavored buyer, so that his rival's advantage can decisively affect the profitability of his business. Thus, if a supplier charges a higher wholesale price to one of two rival dealers, that dealer may be driven out of business or ousted from certain markets which are difficult or time consuming to re-enter. In ordinary circumstances, the supplier would not adopt such a price policy unless it were necessary to cover higher costs of serving the disfavored dealer or unless he believed the dealer would be able to continue to buy from him at this price. However, if a preferential price policy does remove some rival of a favored dealer, *this* dealer may then be in a position to raise his resale price or by other means to exact higher profits in the "sheltered" market. In this case, *the resulting excess earnings may be sufficient to enable the dealer to compensate the discriminating supplier for the immediate loss caused by his departure from "normal" profit-maximization in granting the preference in the first place.* Under these circumstances, then, restriction of competition can be "sold" along with the sale of the product.

For the creation of this sort of competitive advantage, it is not absolutely necessary that the competitors be served by the *same* supplier. Exceptionally favorable terms granted by one supplier might put his customer in a position to out-compete rivals served by other suppliers. However, the prospect of these other suppliers' retaliating in kind would tend to deter such a course of action. Therefore, the probability of deliberate discrimination appears much greater in situations where one seller serves two or more competitors.

A distinguishing characteristic of this sort of (type 2) discrimination is that it would be unprofitable to the discriminator if it were not for its effect on the competitive position of the receiver of preference, whereby it gives rise to the possibility of compensation. Thus discrimination (in this sense) can occur as a deliberately adopted policy only where the favored party is competing against the less favored in a second market—e.g., where buyers of service from the same railroad are competing against each other as sellers of automobiles. From this it follows that a seller will deliberately discriminate only where his product is resold or used in the production of another good (and that a buyer will discriminate only where his suppliers are competing as purchasers of other goods, or as sellers to other buyers). For it is only in this situation that a seller (or buyer) can provide his customer (or supplier) with an opportunity for profit that is not entirely at his own (i.e., the discriminator's) expense, and hence make the entire transaction profitable for both parties. (This argument obviously applies only to "type 2" discrimination. "Type 1" discrimination is also temporarily unprofitable to the discriminator, but he benefits directly from elimination of his own competitors.)

A basic condition for this sort of discrimination is the ability to profit at the expense of a third party. In what seems to be the typical case, the parties to the discrimination are suppliers of different factors used in the production of the same final product; the advantage produced by the discrimination is due *ultimately* to the elimination of competition in the market for this final product; and the "third party" who pays is the final consumer of the product. An ultimate consumer can in general benefit by preferential treatment only to the extent that the man who sells to him loses. There is therefore no incentive for the seller to grant him preference, since there is no net gain from which he can be compensated.

The essential features of the argument are not changed where preference is obtained by the use of the superior "bargaining power" of a large buyer, and the only "compensation" received by the grantor of preference is the retention of the buyer's trade. The preferential price policy re-

sults in a *loss* to the supplier as compared with what he could realize if the large buyer could be immediately replaced by other buyers. Also, the long-run profitability of the transaction, from the point of view of both buyer and seller, depends on its effectiveness in knocking out the competitors of the favored buyer. It is always possible for an important customer to gain a short-run advantage by threatening to withdraw his business unless concessions are made; however, if there were no anticompetitive effect, the large buyer who insisted on "squeezing" his suppliers (by paying less than they could normally obtain) would tend eventually to find himself supplanted by competitive customers.

The sort of discrimination discussed here is certainly broadly similar to that which is an offense under the Robinson-Patman Act, and it may well be that the differences in detail between the two concepts do not reflect a real difference in principle. Moreover, it is at once evident that it is in "intermediate sale" situations such as those described here that many of the discriminations dealt with in law have actually occurred. The shipper-carrier relationship fits in here, since the shipper purchases the services of the carrier to use in making the final product, which is, of course, product-at-place-of-sale.[17] Similarly, purveyors of drugs and groceries buy supplies from manufacturers in order to resell them in competition with one another in the retail market.

The actual making of a sale is not a fundamental requirement. Two parties may supply complementary factors of production without any actual buying and selling between them;[18] nevertheless, discrimination may occur through some vehicle other than price. *Price* discrimination (type 2) is simply a leading genus of a large species of practice whose typical characteristic is the restriction of competition in one market through preferences granted in a second.

Thus, credit terms, quality of product, quickness of delivery, accompanying services, commitments not to deal with competitors, some vertical integrations, and the like, can all be vehicles of restrictive discrimination. Type 1 discrimination belongs to the other main genus of market restriction, whose distinguishing characteristic is that the beneficiaries of restriction are on the same side of the market as, and at least in part identical with, the originators of restriction. This group includes some horizontal combinations, price-fixing agreements, agreements to divide markets, and similar restrictive arrangements.

The *restrictive* discrimination discussed here is to be distinguished from that price discrimination, previously discussed, which is the charging by one seller of prices not related as the average costs of the product or products sold, and which frequently represents an economic gain as compared with uniform pricing. In the achievement of any acceptable allocation of economic resources, the removal of restrictive discrimination (as well as other types of restriction) would appear to be no less essential than the improvement of pricing. Even if every existing price were equated to marginal cost (and the problems of financing decreasing-cost enterprises, and arriving at criteria for investment decisions, somehow solved); even if perfect discrimination became feasible in every market; or even if all overheads could be accurately reflected in average prices charged to those who purchased their products—the resulting allocation of resources would still be undesirable if subject to restrictions such as are embodied in restrictive discrimination. For, evidently, if certain firms or certain products are excluded from certain markets for reasons other than relative failure to satisfy buyers, the affected supply schedules do not reflect minimum opportunity costs and the affected demand schedules do not reflect true consumer valuations in terms

[17] Under the Act to Regulate Commerce, the category "undue preference and prejudice" (Section 3 of the Act) conforms most closely to discrimination under the Robinson-Patman Act. It is not necessary to show competitive injury to prove discrimination under Section 2, but this Section has a very narrow application, which, it can be argued, encompasses only those rate relations which would, under normal, non-restrictive rate-making, be equalities. The regulation of rate relationships among noncompetitive buyers under Section 1 of the Act can be justified because of the extraordinary importance of railroad rates in determining the business fortunes of shippers, and the extreme difficulty of arriving at a really "rational" rate system. Thus management is likely to make mistakes, and these mistakes are likely to be fatal to some shippers.

[18] A relationship of this type is discussed in L. S. Keyes, "The Recommendations of the Network Study Staff: A Study of Non-Price Discrimination in Broadcast Television," *George Washington University Law Review*, January 1959.

of available alternatives. Both the "welfare" optimum and the "self-financing" optimum here derived from it are formulated on the assumption that demands and costs are not distorted by restrictive influences.

As Professor Pigou points out,[19] discriminating monopoly (like some conceivable oligopolistic price equilibria) might cause a greater maldistribution of resources with "free" than with "closed" entry, *if* excess returns earned by the monopolist attracted additional firms into the field until only normal profits were earned by an excessive number of enterprises. The way to deal with this problem, however, is obviously not to impose or tolerate protective barriers to shelter the discriminator (or other monopolist) from additional competitors, who might well be more efficient or otherwise better able to serve the public than the incumbent firm itself, but to remove the excess returns directly by effective price regulation.

It is true that the removal of restrictions is not sufficient to achieve optimum economic performance without the improvement of pricing. With a defective pricing system, the removal of restrictions *may* result in a net economic loss. It is not difficult to show that the removal of a market restriction is almost certain to result in a net economic gain, in the sense that the money value of the gains is larger than the money value of the losses which it occasions. An output increment made profitable by a restriction would (*ex hypothesi*) not bring revenues sufficient to cover its costs without the restriction; and conversely, an output made unprofitable by a restriction would bring in revenues sufficient to cover its costs in an unrestricted market. If revenues represent the value of the increment of output to consumers, and costs represent the value of the sacrificed alternative outputs, then any output change, whether increment or decrement, which results from a restriction represents a net loss, and the removal of any restriction which in any way affects output represents a net gain. But this argument is valid only on the assumption that the market valuations of affected outputs are not prevented from representing actual worth to buyers, either because of the existence of other restrictions or because of pricing defects—e.g., where uniform prices have to be charged although discriminatory prices would result in larger revenues.

In the present context, since it is a *general* removal of all restrictions which is at issue, there is no reason to qualify the argument because the existence of one restriction may make undesirable the isolated removal of another. Defects in pricing, however, are not always subject to correction and to this extent necessitate some qualification of the case for anti-restrictionism. At any rate, the alternative policy of trying to compensate for pricing defects by selective permission of restrictions cannot in practice be followed, because it is quite impossible to estimate discriminatory revenues when only uniform-price revenues are in fact being earned.

Both steps—the removal of restrictions and the improvement of pricing—are essential to the best allocation of resources. As has been suggested above, necessary pricing improvements may well be largely in the direction of greater discrimination (in the orthodox economic sense) rather than towards uniformity. It is the first step, the removal of market restrictions, which seems in general to be the appropriate task of antitrust action, since it is this step which can be at least in part accomplished by the means made available under the antitrust laws: i.e., specific prohibitions and once-for-all orders, rather than continuous authoritative supervision of each firm.

There are, it seems, some who would hold that the *dissolution* antitrust weapon should be used as a direct corrective for price policy, and not merely as an adjunct to a policy of anti-restrictionism—that is, not merely to dissolve enterprises grown large through restrictive practices or combinations. As to the broader use of the weapon, the real questions at issue are these: Are there in fact situations in which price reductions or other benefits from the break-up of an enterprise which has not engaged in restrictive practices would outweigh the costs involved? If so, are these situations identifiable clearly enough, in advance of actual dissolution, so that an acceptable legal rule can be drawn up to cover them? It is the answers to these questions, rather than some new definition of "monopoly power" or "market control," which should determine the scope of use of the dissolution weapon. The further development of improved price policies would seem in fact to be an appropriate task for business management,

[19] A. C. Pigou, *The Economics of Welfare* (London: Macmillan, 1948), p. 289.

supplemented, in some instances, by direct price regulation.

IV

The above analysis has shown that there is a sound economic rationale for an anti-discrimination policy designed to correct economically unjustified relationships among prices charged by one seller to competitive buyers, where these relationships have, or presumably will have, an adverse effect on competition with the favored party. This argument extends readily to price relationships which injure competition with *customers* of the favored party. Similarly, the prevention of "cutthroat" (type 1) price discrimination has a clear justification in terms of antirestrictionism. The scope of this policy thus coincides with the scope of the present law on price discrimination.

The analysis also suggests answers to some questions which have arisen in connection with the interpretation of the Robinson-Patman Act, and some changes in that Act if it is to be adapted to the prevention of restrictive price discrimination. These policy questions are: (1) What sort of adverse effect on competition should be necessary in order that the price relationship responsible for it shall fall within the law's prohibition? (2) What sort of price relationships should be regarded as justified, and hence not subject to prohibition even though its results are anticompetitive in the required sense?

As to (1), there seems to be no reason that the competitive injury requirement be any broader than the diversion of an appreciable amount of business from some one competitor; or to require that this diversion actually take place, as long as it can be shown that it is probably going to take place. This definition certainly does *not* imply that the aim of the law is to erect protective barriers to shelter tradesmen against price competition, since the only price discriminations that will be actually prohibited will be those not economically justified. *Justified* price relations, no matter how injurious, will not be affected. For this reason, there is no need to attempt to stake out "limits of tolerance" within which adverse competitive effects will be ignored.

Apart from *de minimis* requirements to exempt minor restrictions not worth the cost of correction, such "limits of tolerance" would seem to be warranted only where an *actual restriction* is *necessary* (not merely sufficient) to produce some saving in cost or improvement in product. It is difficult to imagine a case in which an unjustified price relation (in terms of non-protective profitability) would be necessary to effect such an improvement in product or cost saving, therefore no "rule of reason" need be employed. In connection with other types of restriction, where such a rule may be warranted, it should be designed to permit those restrictions likely to result in net economic gains and prohibit those likely to result in net economic losses. It is generally not possible to predict net effect for a given restriction on an individual basis, hence it would seem desirable to develop statutory rules for various classes of restriction based on experience with similar instances in the past.

The second question, i.e., the nature of the *justified* price relationship, has arisen in connection with the interpretation of the "cost defense." According to the above analysis, any price relationship which can be shown to be profitable in terms of its direct effect on costs and revenues, and without regard to possible future compensation from indirect restrictive effects, may be regarded as justified for the purpose at hand. In some instances, direct evidence may show the existence of a preferential arrangement between the seller and the favored customer. Here, no further evidence should be necessary to show the impropriety of the resulting price relation. Compliance could presumably be obtained in some of these cases by a return to the *status quo* before the preferential arrangement. In other instances, customary pricing systems (such as rail freight classification by "value-of-the-service" principles) may offer a clue as to what price relations are found profitable under "normal," non-restrictive business motivation. It would also probably be desirable to admit "non-business" motives as a defense, at least for discriminations involving refusals to deal. This could be accomplished by retaining the present proviso in Section 2(a),

> That nothing herein contained shall prevent persons engaged in selling goods, wares, or merchandise in commerce from selecting their own customers in bona fide transactions, and not in restraint of trade.

Similarly, the continued exemption of price relations resulting from meeting competition or

reflecting changes in market conditions would also be consonant with an anti-restrictive aim.

Where the price relation has to be judged solely on its intrinsic content, it will be necessary to attempt to estimate the direct effect of the price relation on profits. Ideally, the question to be answered is this: what would be the probable *direct* effect on the profits of the seller if the questioned price relation were replaced by one which did not have its adverse competitive results? (The appropriate comparison would be, of course, with the *most profitable* price relation which did not have these adverse results.) Revenues, etc., obtained by way of compensation for preferential treatment would, of course, be left out of this calculation. Admittedly, this question is in general extremely difficult to answer, and a demonstration of result "beyond a reasonable doubt" should not be expected or required. Even a requirement that a "reasonably probable" result be shown might put the party subject to the burden of proof at a substantial disadvantage on that account. If the above justification were simply substituted in the law for the existing cost defense, the burden of proof would remain on the defendant. Perhaps experience with the new rule would throw some light on the question of whether the burden should under some circumstance be shifted or further circumscribed to remove this disadvantage.

Though the definition of "injury to competition" suggested above would require no change in the law itself, the redefinition of the justified price policy would certainly require such a change. In addition, a change in wording would be needed in order that the law should apply generally to relations of prices charged by the same seller, whether or not for the same product and whether or not the prices are unequal. This latter change is clearly implied by the main aim suggested above—i.e., the removal of *all* restrictive discrimination; and not just that which happens to involve different prices for the same product. Similarly implied is the removal of the clauses providing for special treatment of brokerage commissions and quantity discounts, since there appears to be no reason for special treatment of these forms of pricing. Finally, the "proportionally equal" services and allowances clauses should probably be recast to provide expressly that these forms of business policy be treated in the same way as ordinary price differences. That is, any service or allowance policy with the required adverse effect on competition should be challengeable subject to the same justification as that suggested for price differences.

SOME ECONOMIC ASPECTS OF THE DOMESTIC SLAVE TRADE, 1830–1860*

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> Preeminent in villainy ... stands the hard-hearted negro trader ...[1]

A widely held view of the interstate slave trade is that it and those who engaged in it were looked down upon and even despised by their contemporaries. Yet, one of the largest and most successful traders, Isaac Franklin,[2] married the daughter of a Presbyterian minister and other prominent Southerners have been identified with various aspects of the trade.[3] It is to this question of status that the paper is directed. It seeks to use the methods of economic analysis to suggest answers to the question of whether and, if so, to what extent the slave trader was held in disrepute by the Southern community. It proposes to do so by using some hitherto-neglected data on the finances of the domestic trade to allow one to form some judgments on the rates of return to capital invested and on the labor income received by those employed in the trade. These returns will then be compared to alternatives available in other pursuits. The results of the comparison in conjunction with the usual analysis of non-pecuniary returns will allow one to make a tentative assessment of the position of this historically unique occupation.

Firms in the interstate trade can be grouped into three classes depending upon their size. Large ones like Franklin and Armfield had "houses" in their buying and selling areas where a member of the firm resided. In the exporting area, typically states of the upper south, slaves were brought by their owners to the house and sold to the trader. Agents in outlying areas sent the slaves they purchased to the house (a combination hotel and jail). In some cases small traders would sell certain slaves to the larger traders instead of taking them into the lower south. The purchased slaves were collected at the house until a number sufficient to warrant shipment to the importing states had been obtained.

The smaller and more numerous firms operated with a principal in both buying and selling areas but usually did not have permanent quarters, using the slave pens of local auctioneers who sold on consignment. The third and perhaps largest class in terms of number of firms consisted of a single trader who moved through the exporting states until he had collected a group of slaves. He then escorted them to the importing states, selling where he could, or at times selling them in a block to a local trader.

The circumstances of slave employment were such that it is probable that the majority of the slaves were sent south after the harvest, though some trading did take place the year around. The mode of transportation was generally by foot with some of the women and children being allowed to ride in wagons. Others were sent by ship (Franklin and Armfield owned their own), especially for the long trip from Maryland and upper Virginia to Louisiana. In the later years some slaves were shipped by rail.[4]

One approach to capital and labor returns would be to examine the records of actual firms. Unfortunately, records in sufficient volume do not exist to make this a practical alternative. It may be possible, drawing upon fragments of data from those records which are available, to

* I wish to acknowledge my indebtedness to Professor H. Gregg Lewis of the University of Chicago for his insightful comments on some of the problems of economics and slavery.

[1] Daniel R. Hundley, *Social Relations in our Southern States* (New York: Henry B. Price, 1860), p. 139.

[2] Wendell H. Stephenson, *Isaac Franklin, Slave Trader and Planter* (University, La.: Louisiana State University Press, 1938), p. 18.

[3] Frederic Bancroft, *Slave Trading in the Old South* (Baltimore, Md.: J. H. Furth Co., 1931), pp. 167–168.

[4] The most extensive discussion of the mechanics of the trade is contained in Bancroft's book. Shorter accounts can be found in Ulrich B. Phillips, *American Negro Slavery* (New York: D. Appleton Century Co., 1936), pp. 187–204 and Kenneth M. Stampp, *The Peculiar Institution* (New York: Alfred A. Knopf, 1956), pp. 237–278. For a contemporary account, see: Ethen A. Andrews, *Slavery and the Domestic Slave Trade in the United States* (Boston, Mass.: Light and Stearns, 1836).

TABLE I

FIVE-YEAR AVERAGES OF PRICES OF PRIME MALE FIELD HANDS, 1830–1860[a]

	(1) Upper South	(2) Lower South	(3) Richmond	(4) Charleston	(5) Mid-Georgia	(6) New Orleans
1830–1835	561	888	529	592	833	942
1836–1840	978	1,180	910	1,053	1,155	1,205
1841–1845	560	715	530	590	685	745
1846–1850	690	903	650	730	870	935
1851–1855	883	1,215	835	930	1,180	1,250
1856–1860	1,115	1,585	1,100	1,150	1,565	1,605
1865–1860[b]	1,318	...	...	...	...	...

[a] Column 1 is a simple average of columns 3 and 4, and column 2 is a simple average of columns 5 and 6. Columns 3–6 are averages of yearly prices, estimated visually, to nearest $25, from chart "Approximate Prices of Prime Male Field Hands in Hundreds of Dollars per Head . . . ," in Ulrich B. Phillips, *Life and Labor in the Old South* (Boston, Mass.: Little, Brown and Co., 1941), p. 177. For complete yearly tables, including a discussion of Phillips' prices, see: Robert Evans, Jr., "The Economics of American Negro Slavery, 1830–1860" (unpublished Ph.D. dissertation, University of Chicago, 1959), pp. 22–26.

[b] This is an alternative estimate. It is introduced because there is a good possibility that Phillips' figures are not correct for this period and area. Evans, p. 26.

obtain reasonable estimates of the relevant costs and prices for a representative firm of traders.

This alternative, considering an average production function for trading firms, estimates the rate of return to capital as a residual after accounting for the values of all other inputs and outputs. Thus the rate of return on capital is a function of the price differentials existing between the two markets, costs of securing, transporting, and marketing slaves, and the number of slaves handled per employee and per dollar of invested capital.

Probably the best estimate of the gross margins of the traders can be obtained by using the prices of prime male field hands (18–30 years of age) which were developed by Ulrich Phillips for the major markets: Richmond, Charleston, Mid-Georgia, and New Orleans. The average differential indicated by Phillips for the area I have termed the Upper South (Maryland, North Carolina, South Carolina, and Virginia) and the Mid-Georgia markets in the period 1830 through 1835 is $272, which is 48.5 per cent of the average buying price for the trader (Table I). For the period 1851 through 1855, the differential was $297 or 33.7 per cent of the buying price. These percentage differentials are similar to ones obtained by traders operating between these areas.[8]

Estimates of operating expenses are more difficult to construct and are potentially open to errors of greater magnitude than those for income because of the limited size of the samples.

[8] See section one of the Appendix, p. 335.

TABLE II

ESTIMATED AVERAGE COSTS OF A SLAVE TRADING FIRM[a]

Cost[b]	Activity
$.02\ P_i$	Transfer of funds between markets
$\frac{.025(P_i + P_e)}{2}$	Rent of quarters, furniture, etc.
$4.00	Food consumed except during transportation
$10.00	Transporattion
$10.00	Clothing
$\$1.00 \cdot \frac{P_i}{100}$	Insurance

[a] A discussion of each of these is contained in Appendix A.

[b] P_i is the price of prime males in the importing states and P_e is the price in the exporting states.

Table II presents what in my judgment are the central tendencies for the various costs, transferring money; clothing, medical care, and board for slaves; buying and selling costs other than labor; and the special risks of death.[9]

The value of the managerial and labor services provided by the trader is difficult to estimate. The records of one suggest that $5 per day was an appropriate wage for the man who handled the coffle (a group of Negroes walking between

[9] The success of any single firm will depend in part upon fortune with normal commercial risks. For the average firm windfall gains and losses are assumed to balance out.

markets).[7] One trader apparently received $1,132 for six months when he handled 146 slaves.[8] Another record lists the trader's wage as equal to 5 per cent of the capital invested, in this case a wage of $1,500.[9] One trader discharged a man, for failure to attend to his duties, whom he had been paying $21.13 a week.[10] Many traders appear to have worked on commission, one party contributing capital and the other the labor services, in some cases with the net income split one-half to each.[11]

Nor is it easy to determine the number of slaves handled per year by a firm or by an employee. The data in Table III do not seem to lend themselves to any sort of a statistical summary, though they may suggest a range of 40 to 100 slaves per employee per year, with the probable average in the lower portion of the range.

If one employs the assumption of a labor return equal to one-half the net proceeds per slave,[12] one obtains capital returns of the magnitudes given in Table IV.

In the absence of complete records for any firm, save one, it is difficult to assess the probable accuracy of the computed return. In the one case of reasonably complete data, it appears that Pascal and Raux in the period 1833 through 1835 when they handled 284 slaves had a capital return ratio (dollars of capital return per slave/trader's buying price per slave) of .153 compared to the capital return ratio of .229 indicated in Table IV for this period. Fourteen of the 284 slaves died. If one converts their experience to that hypothesized in this article, they would have had a capital return ratio of .207.[13]

It is doubtful that the average trading firm turned its capital over only once a year, but since most of the trade took place in the fall and winter months, it is equally doubtful if it turned it over more than twice. Using the assumption of a turnover every six months, Table V indicates the comparison of these returns and those to alternative Southern investments.

The relatively low rate of return in the last five years of the trade suggests that traders may have found the market differential of $267 for prime males too low. At least one trader's com-

TABLE III

NUMBER OF SLAVES HANDLED PER FIRM AND/OR PER EMPLOYEE

Year	Number of Slaves	Notes
...	20	One trader in one trip
...	24–36	Single traders in each trip
...	30–40	Several traders in one trip
...	60–70	One trip
...	80	One trader, Columbia to New Orleans, one trip
...	1,000	Charley Logan perhaps the total number over a ten-twelve year period
1805	51	One coffle, Maryland
1826	82	Spraggins and White in a year
1833	57	One man in a year
1834	59	One man in a year
1834	50	One man in six months
1835	240	"N," apparently a single operator, minimum yearly estimate
1835	900	Franklin and Armfield, minimum yearly estimate
1843	13	One trip
1843–46	141	One trader
1851–52	98	Thomas James, in 17 months, minimum estimate
1851–52	144	Donovan, in 19 months, minimum estimate
1851–52	339	Campbells, in 18 months, minimum estimate
1850	9+	One trader of multi-member firm in one trip
1859	15	One trader in one trip
1859	23	Two traders in one trip

Sources: Andrews, pp. 142, 148; Bancroft, pp. 121, 241, 279–281, 306; *Bennet* v *Woolfolk* 15 Georgia 217 (1854); J. Winston Coleman, *Slavery Times in Kentucky* (Chapel Hill: University of North Carolina Press, 1940), pp. 152–153; Finney Papers, October 6, 1859, October 25, 1859; December 26, 1859; Duke University Library, Durham, N. C., I. A. Jarratt, Account Book, 1834–1835; Duke University Library, Durham, N. C., J. A. Mitchel, Account Book, 1834–1835; *Spraggins* v *White* 3 Martin (New Series) (Louisiana), 661 (1825); Stampp, p. 206.

[7] *Pollock* v *Williams* 42 Mississippi 90 (1868).

[8] P. Pascal, Letter of a New Orleans Slave Trader, 1828–1835 (in the Harvard College Library, Cambridge, Mass.).

[9] *Sullivan* v *Williams* 2 Louisiana 878 (1847).

[10] William A. J. Finney Papers, 1848–1865 (in the Duke University Library, Durham, N. C.).

[11] *Pollock* v *Williams*, 90; *Bennet* v *Woolfolk* 15 Georgia 216 (1854); *Ruffin* v *Mebane* 6 Iredell Equity (North Carolina), 508 (1850).

[12] There are only five cases where a reasonable estimate of labor cost can be made. Three of these involve a 50–50 division and the other two produce dollar costs not inconsistent with those estimated in Table VI.

[13] This involves assuming that the slaves who died would have sold for the average price received by the firm, that most of the expenses had already been incurred (they died in the importing area), and that the firm carried insurance on all its slaves .

TABLE IV

RETURNS PER SLAVE TO CAPITAL EMPLOYED IN THE SLAVE TRADE

Period	Selling Price	Buying Price	Gross Margin	Cost Except Labor	Labor[a] Cost	Return to[b] Capital
1830–1835	$888	$561	$327	$69	$129	$129
1836–1840	1,180	978	202	87	58	58
1841–1845	715	560	155	61	47	47
1846–1850	903	690	213	71	71	71
1851–1855	1,215	883	332	87	123	123
1856–1860	1,585	1,318	267	108	79	79

[a] Labor cost is estimated on the basis of a 50-50 split of the net proceeds.

[b] The data underlying the returns to capital are limited and therefore the returns may contain sizable errors. The largest ones would, however, result from opposite sign errors in the selling and buying prices. This type of error is unlikely as both were derived by Phillips from thousands of bills of sale obtained from similar types of sources in the two areas.

TABLE V

RATES OF RETURN ON CAPITAL, 1830–1860

Years	Upper South Slave-holding	Lower South Slave-holding	Southern Railroads		Slave Trade
			Selected	Com-pleted	
1830–1835	10.5	12.0	...	...	45.8
1836–1840	9.5	...	...	...	11.8
1841–1845	14.3	18.5	...	...	16.6
1846–1850	12.6	17.0	...	...	20.4
1851–1855	13.8	12.0	8.6	...	17.8
1856–1860	11.3	10.3	8.8	8.0	11.8

Source: Except for the slave trade is Evans, p. 51.

ment would support this, "I this day would not give $1400 for a No. 1 man to bring south for I am d—— if they can be sold for $1700 and hard work at that ..."[14]

An accurate estimate of the labor returns requires better data than are available on the volume of prime male equivalent slaves that were handled per employee. It seems, therefore, most appropriate to use a conservative estimate of the number handled.[15]

In well functioning capital and labor markets the returns should tend toward equality for all types of industries and occupations except for differences in risk, non-pecuniary aspects, and labor quality differences. Consequently, if it can be shown that the markets functioned reasonably well, and if due account is taken of all the real factors which might cause returns in a particular industry to diverge from alternative returns, any other differences in returns in the given industry and alternative ones can be ascribed to compensating differentials due to specific non-pecuniary factors.[16] In the case of the domestic interstate slave trade, this would be the degree of dis-approbation.

A variety of factors probably existed in the pre-Civil War period whose effects tended to impair the capital market, yet a comparison of the rates of return earned on alternative forms of capital suggests, as I have argued elsewhere,[17] that on the whole the market functioned surprisingly well. Thus, the findings here that, except for one period, 1830 through 1835, the rates of return to slave-trading capital do not differ to a significant extent (Table V) from those on slave-holding suggest that investors in the industry were not subject to sufficient dis-approbation as to require a compensating differential in their rates of return.[18]

[14] Finney Papers, January 21, 1860.

[15] Since many of the costs have been expressed in terms of percentages of prices, the estimated rates of return are relatively insensitive to the use of prime male equivalents in the analysis. Thus, a trader who handled only fifty-year old men (who typically sold for about one-half of the prime price) would have needed about twice the volume of one who handled only prime males in order to have received the same labor income.

[16] This follows from the familiar hypothesis that the supply of labor to an occupation is a function of its net advantages.

[17] Evans, p. 53.

[18] If one uses an alternative estimate of the rates of return to slaveholding, one might accept the hypothesis that capital received a compensating differential. In general these rates are lower than those given in Table V, ranging for the years 1840–1860 between 4½ and 8 per cent. Alfred H. Conrad and John R. Meyer, "The Economics of American Negro Slavery, 1830–1860," *Journal of Political Economy*, April 1958, p. 107.

This conclusion is perhaps re-enforced when one considers some special characteristics of the three periods, 1830 through 1835, 1846 through 1850, and 1851 through 1855 when the returns might be considered to be greater than those to alternative forms of the general slave industry. There is some evidence to suggest that the estimated prices for New Orleans for the period 1830–1835 may be too high.[19] If, based upon this suggestion, one appropriately adjusts the Lower South prices, the estimated rate of return for that period is 40.0 rather than 45.8. These periods also appear to be years of expansion in the volume of the trade.[20] It is possible that these returns were in excess of equilibrium and resulted from the need to attract new firms into the business.[21]

Turning to the labor returns (Table VIII), it appears that $1,000 a year was a good income for employees in the skilled mechanical trades, with $1,800 being a good income for the same type of skill used in conjunction with supervisory authority. If the estimates of labor income to the trader (Table VI) are correct, he received an income equal to or greater than that received by supervisory mechanics.[22] Thus, it would appear that the interstate slave trader received a wage in excess of an alternative wage.[23] Whether positions as supervisory mechanics were reasonable alternatives for slave traders must go unanswered.[24] It may be that successful commercial

TABLE VI

LABOR RETURNS IN THE SLAVE TRADE

Years	Labor Cost Per Prime Male Equivalent Slave	Number Handled Per Year	Labor Income Per Year
1830–1835	$129	30	$3,870
1836–1840	58	30	1,740
1841–1845	47	30	1,417
1846–1850	71	30	2,130
1851–1855	123	30	3,690
1856–1860	79	30	2,370

TABLE VII

MAGNITUDE OF INTERSTATE SLAVE MOVEMENTS

Years	Number of Slaves	
	By Traders[a]	By Traders and Owners[b]
1830–1840	106,000	320,000
1840–1850	60,000	223,000
1850–1860	80,000	279,500

[a] Winfield H. Collins, *The Domestic Slave Trade* (New York: Broadway Publishing Co., 1909), pp. 39, 50, 63. These are his estimates of the interstate slave trade. They are based upon the differences in actual slave populations and the slave populations which would have existed in those states he terms exporting states, had the populations of those states increased at the same rate as did the entire slave population, coupled with the assumption that 40 per cent of all slaves transferred between states were moved by traders.

[b] My estimates of slave transfer by owners and slave traders using the same principle as Collins but including as an exporting state any one which suffered a relative loss in slaves.

[19] Stephenson, p. 84, suggests that Phillips' New Orleans prices may be from $50 to $100 too high in the period 1828–1832.

[20] This is suggested by the movements in relative prices (Table I) and the estimated volume of the interstate slave trade (Table VI).

[21] The theory of a well functioning capital market states that opportunities for expansion in an industry will be reflected in capital gains rather than in returns in excess of those available in alternative uses. This is not applicable here because the capital values are not those of specialized factors to the trading industry, but are those determined in the labor market for slave services in the importing and exporting areas.

[22] The single exception is the period 1841–1846. Even here, more complete wage data might suggest that the alternative wage was lower for these years than indicated in Table VIII.

[23] The conclusions are not, as they may appear to be, unduly dependent upon the division of the net proceeds between capital and labor. If capital invested in the trade received a share smaller than the 50 per cent used in these calculations, then the wages of the trader would have been even higher. This would support the major conclusion, that he received a compensating differential for the disapprobation accorded his occupation. If the share of capital were greater than 50 per cent, capital would have received a compensating differential and the traders' would have been reduced or eliminated. The latter is not too probable, primarily because the scattered data on traders' wages (p. 331) suggest incomes in excess of alternatives. It would also involve the problem of rationalizing why disapprobation fell upon capital (which could and in some cases probably did involve silent partnerships) and not upon the practitioners. Thus, the only probable impact of errors in the division of income on the paper's conclusions would be to modify them in regard to slave-trading capital not receiving a return in excess of its alternatives.

[24] The problem is not peculiar to this paper. For a discussion of the same type of problem in a modern setting, see: Milton Friedman and Simon Kuznets, *Income from Independent Professional Practice* (New York: National Bureau of Economic Research, 1945), pp. 405–410.

TABLE VIII

WHITE WAGES IN THE SOUTH

Year	Location	Occupation	Wage
1840	North Carolina	Railroad Machinist	$52
1840	North Carolina	Railroad Engineer	60
1843–48	North Carolina	Miner	30–35
1849	Louisiana	Riverboat Mate	70.50
1849	Louisiana	Riverboat 1st Engineer	180
1849	Louisiana	Riverboat Pilot	163
1853	South Carolina	Railroad Engineer	75
1855	Virginia	Railroad Master Machinist	100
1856, 1859	North Carolina	Railroad Engineer	85
1857	South Carolina	Brick Inspector	75
1857	South Carolina	Brick Foreman	150
1859	Virginia	Journeymen Machinist	48.79
1859	North Carolina	Railroad Engineer	75
1859	Virginia	Railroad Master Machinist	84
1860	South Carolina	Stonecutter Foreman	150
1860	Virginia	Railroad Master Machinist	125

Sources: *Annual Report of the Charlotte and South Carolina Railroad*, 1853; Duke University Library, Durham, N. C., Washington Mining Company Ledger, 1843–1848; Department of Archives, Louisiana State University, Baton Rouge, La., Orramel Hinckley and Family Papers, Ledger, 1849; North Carolina Department of Archives and History, Raleigh, N. C., North Carolina Railroad Account Book, 1859; President's Report, North Carolina Railroad, 1856; *Annual Report of the Raleigh and Gaston Railroad*, 1840; South Carolina State Archives, Columbia, Payrolls of the New State House, 1857–1860; *Annual Report of the Board of Public Works to the General Assembly of Virginia*, 1855, p. 776; *Annual Reports of the Railroad Companies of the State of Virginia for the year ending September 30*, 1859, p. 394; *Ibid.*, 1860, p. 425; *Annual Report of the Virginia and Tennessee Railroad*, 1859; *Annual Report of the Western North Carolina Railroad*, 1858.

TABLE IX

ANNUAL SALARIES OF RAILROAD OFFICERS IN VIRGINIA, 1850–51 AND 1859–60

Salary	Occupation		
	Presidents	Superintendents and Chief Engineers	Treasurers, Secretaries, and Chief Clerks
$3,600	...	1	...
3,000	2	2	...
2,500	1	5	...
2,000	5	3	2
1,800	...	...	1
1,750	...	...	1
1,700	1	...	...
1,500	6	...	4
1,400	...	...	1
1,250	...	...	1
1,200	...	2	1
1,000	...	...	1
750	...	...	1
600	...	...	1

Sources: *Annual Report of the Board of Public Works to the General Assembly of Virginia*, 1850, pp. 82, 106, 112, 133, 153; *Ibid.*, 1851, pp. 147, 155, 176, 191, 215, 230, 251; *Annual Reports of the Railroad Companies of the State of Virginia to the Board of Public Works for the year ending September 30*, 1859, pp. 393, 517; *Ibid.*, 1860, pp. 164, 214, 239, 305, 423, 471.

activities in that period required a higher quality labor than that demanded by the alternative I have used. Table IX provides some data on wages in occupations that probably required greater talent than those summarized in Table VIII. These suggest that if slave trading demanded a quality of labor similar to that of railroad presidents and chief engineers that the traders did not receive a wage in excess of their alternatives. Certainly for men like Franklin or Nathen Forest, of Civil War fame,[88] a good case can be made that the higher alternative would be more appropriate, though this is not true of the hundreds of small traders described by Stampp.[89]

Even granting that the traders' labor income exceeded their alternatives, there may have been non-pecuniary factors other than dis-approbation which would explain it, such as time away from home, variability of income, etc. I would argue, however, that there is at least a strong presumption that there was an excess return and

[88] Bancroft, p. 263.
[89] Stampp, pp. 260–264.

that a major portion can only be explained as a compensating differential resulting from the disrepute in which the occupation was held.

These conclusions of a difference in the attitude of the community toward the employment of capital and labor in the trade may strike some as surprising, and perhaps they are. It should be remembered that the trade was recognized as a necessary if perhaps undesirable activity. Therefore, it may have been easy for the community to rationalize investment in it as somehow necessary, but to shun the practitioner who could be blamed for the attendant evils, separation of families, etc., which, while not necessary to the trade, were determined less by the insensitivity of the trader than by the market preferences of of the community.

APPENDIX A

Source Notes on Revenue and Costs

1. Average margins for actual traders can be computed for I. A. Jarratt and A. and A. T. Walker, both of whom operated between North Carolina and Alabama markets.

2. In a period characterized by inadequate banking, the transfer of funds was not costless. It probably ranged between 1 and 50 per cent

TABLE X

North Carolina–Alabama Slave Price Differentials

Year	(1) Sex	(2) No.	(3) Average North Carolina Price	(4) Average Alabama Price	(5) Gross Margin (4) − (3)
1833	Male	26	$423.58	$651.46	$227.88
1833	Female	16	321.88	489.69	167.81
1834	Male	18	462.50	610.94	148.44
1834	Male	20	459.90	658.95	199.05
1834	Female	8	332.50	505.63	173.13
1835	Male	9	499.67	705.67	206.00
1835	Female	7	378.71	550.72	172.01
1853	Male	5	860.00	1,102.00	242.00
1854	Male	4	917.50	1,157.50	240.00
1854	Female	5	790.00	970.00	180.00

Sources: 1833–1835, Jarratt Account Book; 1853–1854, Southern Historical Collection, University of North Carolina, Chapel Hill, N. C., A. and A. T. Walker Account Book 1851–1861.

TABLE XI

Costs of Transporting Slaves Between Southern Markets

Year	Number of Slaves	Means of Transport	Cost per Slave	Markets
1832–35	201	Sea	$17.00–20.00	Norfolk-New Orleans[a]
1833	21	Sea	19.52	Norfolk-New Orleans
1834	10	Sea	17.10	Norfolk-New Orleans
1834	20	Sea	16.50	Norfolk-New Orleans
1834	50	Foot	13.68	Virginia-Memphis
1843	13	Unknown	19.75	Lexington-Natchez
1849	10	Sea	15.10	Baltimore-New Orleans
1850	3	Sea	15.25	Baltimore-New Orleans
1853	12	Foot	8.36	North Carolina-Alabama

[a] Charge is for those over 10 years of age. Those under 10 were charged ½ price except infants who were carried free.

Sources: Coleman, pp. 152–153; Mitchel Account Book; P. Pascal, Letters; Department of Archives, Louisiana State University, Baton Rouge, La., George Rust and Family Papers, January, 1849 and January, 1860; Walker Account Book.

TABLE XII

ANNUAL CLOTHING COSTS OF ADULT MALE SLAVES

Year	Cost	Notes
...	$30.00	Farm Labor
1817	17.00	Plantation
1851	25.00	Chesterfield Railroad, my estimate from data in annual report
1855	20.00	Charleston and Savannah Railroad
1858–59	5.91	Georgia Plantation

Sources: North Carolina Department of Archives and History, Raleigh, N. C., North Carolina Railroad Account Book, 1850; Phillips, *American Negro Slavery*, p. 376; *Annual Report of the Board of Public Works to the General Assembly of Virginia*, 1851, p. 181; B. H. Wall, "Ebenezer Pettigrew—An Economic Study of an Ante Bellum Planter" (unpublished Ph.D. dissertation, University of North Carolina), p. 151; J. L. Watkins, *Cost of Cotton Production* (United States Department of Agriculture Miscellaneous Series Bulletin No. 16, Washington, 1899), p. 35.

TABLE XIII

COSTS OF SLAVE LIFE INSURANCE

Date	State	Policy	Cost per $100 per year	Sex	Age
1854	Virginia	$600	$2.10	Male	...
1860	Georgia	600	3.34	Female	34
1847	Mississippi	525	2.70	Female	36
1847	Mississippi	600	1.94	Female	23
1847	Mississippi	525	1.69	Female	17
1847	Missippissi	550	1.68	Male	20
1847	Mississippi	525	1.94	Female	23
1847	Mississippi	600	1.92	Male	22
1847	Mississippi	375	2.76	Female	39
1847	Mississippi	500	2.70	Female	38
1847	Mississippi	500	1.95	Male	25
1847	Mississippi	500	1.95	Female	20
1849	Virginia	...	1.73	Male	20[a]
1849	Virginia	...	2.98	Male	50[a]
1854	Louisiana	1,250	5.30	Male	...
...	Tennessee	650	2.00	Male	26
...	Tennessee	650	2.50	Male	31

[a] These are based upon published rates rather than actual policies and include $1 for writing the policy, which while not given in the fee chart appears to have been a common charge.

Sources: Duke University Library, Durham, N. C., John Buford Papers, 1854; Negro Collection, Charter Oak Insurance Company, 1860; Department of Archives, Louisiana State University, Baton Rouge, La., W. A. Britton Account Book 1847; John H. Randolph Papers, June, 1854; Phillips, *American Negro Slavery*, p. 363; Alderman Library, University of Virginia, Charlottesville, Va., Broadside of Franklin Slaughter, 1847.

though 2 per cent is perhaps the most reasonable value to use for an estimate. See: Bray Hammond, *Banks and Politics in America* (Princeton: Princeton University Press, 1957), p. 701; and Finney Papers, January 1860.

3. Buying and selling costs, other than labor, are estimated as equal to the 2½ per cent charge which auctioneers charged for slaves sold on consignment. The implied division between capital and labor is consistent with the one used for the trading firms. Coleman, p. 162; Bancroft, p. 143; Harrison A. Trexler, *Slavery in Missouri* (The Johns Hopkins University Studies in Historical and Political Science, Series 31, No. 2, Baltimore, 1914), p. 49.

4. Feeding costs of consigned slaves ranged between $0.25 and $0.37½. Coleman, p. 162; Trexler, p. 49; New York Public Library, Account Book of Hector Davis of Richmond, 1860–1864. An approximate mid-range from the above of $0.30 and an estimate of two weeks as the average length of time slaves were held exclusive of transport time were used to estimate this cost.

5. Costs of transportation are presented in Table XI. The central tendency appears to be between $15 and $20 per slave for the long trip between Virginia and Louisiana. For an average trip between the Upper South and the Lower South, a figure of $10 might be the most appropriate to use.

6. Clothing costs presented in Table XII appear to have a central tendency of about $20 a year. A cost of $10 will be used since it is doubtful if more than one-half a year's clothing was provided.

7. Average medical expenses per plantation slave appear to have been between $1.50 and $2 per year. Conrad and Meyer, *Journal of Politi-*

TABLE XIV

INTRA-MARKET PRICE MOVEMENTS
(PRIME MALE FIELD HANDS)

Date	Mid-Range Price	Market
January, 1859	$1,515	Richmond
July, 1859	1,487	Richmond
July, 1859	1,562	Richmond
November, 1859	1,645	Richmond
December, 1859	1,450	Richmond
December, 1859	1,725	New Orleans
January, 1860	1,575	New Orleans

Source: Finney Papers.

cal Economy, April 1955, p. 104. Since these would include certain expenses such as birth and old age which are not applicable to the trader, his medical costs were probably less than $.50 per slave. Hence they are not formally considered.

8. The cost of slave deaths may be approximated by a one-half year premium for commercial insurance which, as is illustrated below, was used by at least some traders.

> ...They die daily...some has actually died in the cars going south 5 or 6 has died out at Lumpkins jail...But all the grown ones I had insured as soon as I bought them.... (Finney Papers, January 30, 1859.)
>
> ...If I went to New Orleans I certainly would want the Negroes insured even if it cost $20 or $30 a head.... (Finney Papers, November 26, 1859.)

9. An indication of possible intra-market price variability is shown in Table XIV.

THE ACADEMIC STATUS OF THE ECONOMIC SCHOLAR IN THE SOUTH*

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The mobility of the college professor, if not legion, has at least been amply documented. In this he differs from his professional colleagues, the lawyer and the doctor, who tend at an early date to find the communities where they can practice their professions to their satisfaction, and to remain fixed throughout their active professional lives. The college professor may have served an instructorship, for example, at Swarthmore, accepted an Assistant Professorship at the University of Michigan, joined the faculty of the University of Wisconsin as Associate Professor, and closed his career as Professor at Stanford, his institutional journey having been highlighted on occasion by a Fulbright year in France or a Guggenheim year in the British Museum.

Mobility of academic personnel is, of course, part of the rich tapestry of the American higher education scene, but new patterns of movement are becoming increasingly apparent among geographical regions. I refer to the tendency of many of our colleagues to seek their positions outside the South or if they have accepted an appointment in the South to look to the North or the West for advancement. In effect, these colleagues are reluctant to consider prolonged employment in a section of the country in which they might otherwise find many attractions.

No one in these times will wish to suggest that our colleagues prefer to teach in some area other than the South for economic reasons alone. But all of us have at least a suspicion that academic salaries leave more to be desired in the South than in other sections of the country. And knowing as we do that money is an incentive, even to a profession notoriously given to tightening its belt and doing without, we should find it worthwhile to examine whether or not an adequate salary level is one of the attractions our colleagues have failed to find in the South, and whether or not an economic lag may be affecting adversely the quality of our southern faculties.

THE STATISTICS AVAILABLE ON ACADEMIC SALARIES

Three main sets of published academic salary statistics are at present accessible for 1959–60: (1) the U. S. Office of Education Planning and Management Data, covering 1,433 institutions and giving, by academic rank, quartiles, median, and weighted mean of institutional mean salaries, analyzed regionally by type of institution and size of enrollment;[1] (2) salary data from the National Education Association giving the distribution of individual salaries paid in 926 institutions;[2] and (3) the AAUP self-grading salary survey, including reports from 356 accredited institutions with AAUP chapters.[3]

Before going further, it is only proper that an examination be made of the limitation of the data for regional comparisons. Use of the U. S. Office of Education data for regional analyses presents two main problems. First, their regional classification leaves much to be desired. To provide anonymity of the salary data the states have been combined on the basis of physical proximity into four large regional groups, some of which lack economic homogeneity. For example, California is combined for analytical purposes with twelve other states including Texas, Oklahoma, Montana, and Idaho. Even the Great Lakes and

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* A paper delivered at the thirtieth annual conference of the Southern Economic Association in Atlanta, Georgia, November 19, 1960.

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[1] U. S. Office of Education, *Higher Education Planning and Management Data, 1959–60, Salaries, Tuition and Fees, Room and Board*, Circular No. 614, 1960.

[2] National Education Division, Research Division, *Salaries Paid and Salary Practices in Universities, Colleges, and Junior Colleges, 1959–60*, Research Report 1960-R3, 1960.

[3] American Association of University Professors, Committee Z, "The Economic Status of the Profession, 1959–60: Annual Report by Committee Z," *AAUP Bulletin*, Vol. 41, Summer 1960, pp. 156–93.

Plains is far from being a homogeneous unit, for states such as Michigan, Illinois, and Indiana are combined with South Dakota, North Dakota, and Nebraska. Important salary differentials are lost as a result of the composition of the sub-groups.

A second obstacle to the use of the U. S. O. E. data for accurate comparisons arises from the classification of reporting institutions into five categories—universities, liberal arts colleges, teachers colleges, two-year colleges, and professional and graduate schools. While these classifications are better than no classification at all, the regional sub-groups resemble baskets of unstandardized assortments of mixed fruits. For example, each of the regional public and private university baskets has its own unique mixture of "university" types, with some of the institutions assigned to the university category giving little work beyond the master's degree. While the inclusion of these semi-universities would have little effect upon the comparison if their weights were equal in all regions, this is not the case, and it is probable that some of the existing differentials are statistically concealed.

To ameliorate the effect of the problems described above, discussion of the U. S. Office of Education data will be limited to comparisons of the Southeast with the remainder of the country, called for purposes of simplification the non-South. The South, when applied to U. S. O. E. data, will include the twelve states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. As to the problem of the classification of institutions into homogeneous types, we can only warn the reader in advance that some bias exists.

The second set of data is provided by the National Education Association salary survey for 1959–60. Since they use seven rather than four geographical regions, they are able to group together somewhat more homogeneous states than the U. S. Office of Education. Their coverage is far broader than that of the AAUP, namely, 926 institutions, which, however, are not identified. Failure of some of the large high-paying institutions to report would also distort the regional analysis of salary patterns. There is no way of knowing to what extent N. E. A. data may be subject to this type of distortion.

The AAUP data include both the published and the unpublished. The published data consist of letter grades for the Minimum and Average Compensation Scales and the Average Compensation for All Full-time Faculty for 315 institutions authorizing publication. Unpublished data extend the above information to institutions choosing not to authorize publication. In addition, most of the 356 reporting institutions provided confidential data by academic rank on the number of full-time faculty, average salary, average specified fringe benefits, and average and minimum compensation by rank.

Biases may also exist in the AAUP data. In the AAUP salary-grading programs three selectivity factors operate. First, the primary purpose of the program is not statistical but professional. The goal is to provide a system of published salary grades which will enable both institutions and faculty members to determine relative compensation standing. The Association requested reports only from those institutions with AAUP chapters. Second, I suspect that institutions with high grades are more likely to submit reports with a resulting upward bias in the sample. If the proportion of the lower-grade non-reporters and their faculty structures were evenly distributed throughout all regions, the effect upon analysis of differentials would be minimal. Unfortunately, these proportions cannot be estimated accurately. A third factor affecting the usefulness of the AAUP data is that where the chapter officer or the responsible administrator is somewhat lackadaisical, the Association receives no reports at all. This need not introduce a bias in the computation of regional salary differences unless it is assumed that there are regional and structural differences in the average propensity to be lackadaisical. It is this limitation in coverage in the 1959–60 survey which prevents the statistical comparisons desirable for a more careful exploration of regional salary differentials.

Now that the caveats have been carefully aired so that the reader is aware that the data indicate approximate magnitudes, an examination can be made of the economic status of the academic scholar in the South and his counterpart in other sections of the country.

DIFFERENTIALS SHOWN BY U. S. OFFICE OF EDUCATION DATA

According to U. S. O. E. data the greatest differential between the South and the non-South

TABLE I

REGIONAL SALARY DIFFERENTIALS, 1959–60, IN FOUR-YEAR INSTITUTIONS OF HIGHER EDUCATION, BY ACADEMIC RANK AND TYPE OF INSTITUTION

The average 9–10 months salary in the non-South expressed as a relative of the average 9–10 months salary in the South.

(U. S. Office of Education Salary Data for 1959–60)[1]

Type of Institution	Average Salary in the Non-South as a Per Cent of Average Salary in the South			
	Professor	Associate professor	Assistant professor	Instructor
Public University	119	114	109	110
Private University[2]	120	105	105	106
Public Liberal Arts	137	131	129	115
Private Liberal Arts	119	117	118	114
Public Teachers Col.	114	117	118	125

[1] U. S. Office of Education, *Higher Education Planning and Management Data, 1959–60*, pp. 18–22. Average salary for the non-South calculated for each rank by multiplying the average salary by the number of the faculty members in the North Atlantic, Lakes and Plains, West and Southwest, summing the products, and dividing the sum by the total number of faculty members in that rank. Unpublished data supplied by U. S. Office of Education.

[2] Since the private university category includes in the non-South a number of semi-universities which have minimum programs in the doctoral field, the heterogeneity of the classification tends to reduce the average salary in the non-South. The much lower differential in the rank of associate professor is partially caused by the fact that some of the higher-paying institutions, such as Harvard, Columbia, Princeton, have relatively few associate professors.

is to be found in the rank of full professor (Table I). This might be expected in view of the lower mobility in the higher ranks. To equal the remuneration of their institutional counterparts in the remainder of the country, the South would have to increase average salaries of full professors by approximately 19 per cent for public and private universities and private liberal arts colleges. In the public liberal arts colleges even higher increases would be required, for the mean salary of professors in the non-South was about 37 per cent higher than in the South. Among teachers colleges, the regional differential for full professor was less pronounced, only 14 per cent.

It has been thought by some economists that the South might be more nearly competitive with other sections of the country in the rank of instructor and assistant professor. This hypothesis was advanced on the basis that in the starting ranks young faculty members would be sensitive to salary differentials and, therefore, Southern salaries would be forced up by competitive pressure to approximate those of other sections of the country. This hypothesis seems to hold only for private universities, where actually the non-South pays only 6 per cent more to instructors and 5 per cent more to assistant professors. In public universities the North-South differentials are 10 and 9 per cent, respectively, for instructors and assistant professors, confirming the hypothesis only to the extent that these differentials are still smaller than for the higher ranks. The hypothesis seems to break down completely for public teachers colleges where the differentials are 25 and 18 per cent, and actually larger than for the higher ranks; in the liberal arts colleges, public and private, the differences are likewise substantial, though the difference for instructor is smaller than in the higher ranks.

I can see one main explanation why the hypothesis of the competitive salary equalization is disconfirmed to a greater or lesser degree in all except the private universities. This explanation is that the product acquired is not comparable and that many of the persons called "instructors" and "assistant professors" in these groups of institutions would not qualify for these positions elsewhere. For example, a rough count in the 1960–61 catalogue of a large Southern state university indicates that almost half of the assistant professors—even omitting agri-

TABLE II

SALARY DIFFERENTIALS BETWEEN ACADEMIC RANKS IN THE SOUTH AND NON-SOUTH FOR 1959–60, BY TYPE OF INSTITUTION

The average 9–10 months salaries of the higher ranks expressed as a relative of the average 9–10 months salary for instructors, by geographical region.

(U. S. Office of Education Salary Data for 1959–60)[1]

Type of Institution	Average Salary of the Three Highest Ranks Expressed as a Relative of the Average Salary for Instructor							
	Professor		Associate professor		Assistant professor		Instructor	
	South	Non-South	South	Non-South	South	Non-South	South	Non-South
Public University	182	196	146	150	125	124	100	100
Private University	186	211	149	149	123	122	100	100
Public Lib. Arts	162	193	138	156	118	132	100	100
Private Lib. Arts	155	162	130	133	113	117	100	100
Teachers Colleges[2]	163	148	137	128	120	113	100	100

[1] U. S. Office of Education, *Higher Education Planning and Management Data, 1959–60*, pp. 18–22.
[2] Public Teachers Colleges.

culture and physical education—did not hold the doctorate.[4] By paying significantly less Southern institutions are evidently getting a lower-quality product.

What are the prospects for a beginning academic teacher to rise to higher income levels in the South compared with the non-South? This relationship can best be seen from the salary increments as we move up from the lower to the higher ranks (Table II). We find that in the public and private universities the average salaries of assistant and associate professors exceed those of instructors by approximately the same percentages in the North and in the South. The hitch comes in the full professor rank. Except for teachers colleges the ratio of professors' to instructors' salaries is consistently lower in the South than in the North. The differences are most drastic in private universities, where professors get only 86 per cent more than instructors in the South and 111 per cent more in the North, and in public liberal arts colleges where professors get a mere 62 per cent more than instructors in the South but 93 per cent more in the North.

[4] The count excludes librarians holding academic rank, agronomic sciences, and faculty teaching in the extension service. Sciences had the lowest proportion without the doctorate, namely 20 per cent; in education, including psychology, humanities, and the social sciences the proportions ranged from 40 to 47 per cent; business (excluding economics), 89 per cent.

This poor economic status of the full professor in the South can be judged differently with regard to the past and present, on the one hand, and with regard to the future, on the other. Concerning past and present, we may merely refer to the low degree of mobility of academic teachers of greater age and seniority. Their opportunities to move away toward better paying jobs are typically small, and their institutions know it. In an understandable attempt to stretch their dollar, the administrators have refused to raise the salaries of their captive senior staff. The situation, however, is serious for the future. The most promising men in the middle ranks will almost certainly be attracted by the better earnings prospects in the other parts of the country. Even if we admit of instances in which scholars will resist the attraction to leave the South, we cannot expect such local patriotism and self-denial to be general enough to save the quality of Southern higher education. There is, of course, the possibility that a small number of individual institutions in the South are able to meet competition and pay competitive salaries. We shall return to this point when we discuss the AAUP data.

DIFFERENTIALS SHOWN BY NATIONAL EDUCATION ASSOCIATION DATA

The special feature of the N. E. A. salary data is the frequency distribution of salaries among brackets with $500 intervals. Moreover, the

N. E. A. data permit the consolidation of the Southwest with the Southeast in order to compare all the states of the United States South with the non-South. For the combined Southeast and Southwest only 16 per cent of all academic teachers receive salaries of $8,000 or more, whereas 30 per cent of the academic teachers in the other parts of the U. S. receive such salaries. Coming to the lower end of the salary scale, 47 per cent get less than $6,000 in the South, in contrast to 30 per cent in the non-South.

DIFFERENTIALS SHOWN BY AAUP DATA

The unique features of the AAUP data are (1) that they apply to individual, fully identified institutions and (2) that, exclusive of medical and dental schools, 315 institutions publicly identify themselves with specific characteristics of their salary structures.

Since I have already discussed average salaries by academic rank for the larger sample of institutions surveyed by the U. S. Office of Education I shall not bore you with more of these compensation statistics. Let us now turn to that unique feature of the AAUP program, the letter grades for the compensation scales. For the exact meaning of the grades of A, B, C, D, E, F, and below F, I must refer to the description of the program in the Summer *AAUP Bulletin*. Let me recall to your memory only that a grade is given in each rank to the average compensation, which includes salaries and countable fringe benefits, and another grade to the minimum compensation and that the grade given to either scale is determined by the lowest grade received by any rank. We shall confine ourselves here to grades for the Average Compensation Scale.

TABLE III

NUMBER OF REPORTING INSTITUTIONS AND NUMBER OF THEIR FULL-TIME FACULTY BY LETTER-GRADE FOR THE AAUP AVERAGE COMPENSATION SCALE, 1959–60, THE SOUTHERN REGION AND THE ENTIRE COUNTRY[1]

Letter Grade of Average Compensation Scale	South Plus Border States		Entire United States	
	No. of institutions	No. of full-time faculty	No. of institutions	No. of full-time faculty
A	0	0	3	1,603
B	3	780	31	15,002
C	7	1,639	65	19,049
D	20	5,767	132	23,691
E	42	6,411	81	9,546
F	14	841	24	1,290
Below F	3	110	6	175
Total	89	15,548	342	70,356

[1] The southern region includes the South (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia) and the border states of Delaware, District of Columbia, Kentucky, Maryland, Missouri, Oklahoma, Texas, and West Virginia.

The first comparison suggested by the data would be the share which southern institutions have in the number of various grades. That none has a grade of A is not serious, since of those authorizing publication only two Ivy League universities have made that grade. Of the 342 institutions submitting usable reports there were 31 institutions with a grade B scale.[2] If the border states are counted with the South proper, Duke, Johns Hopkins, and the University of Virginia are the only three institutions in the B group, making 10 per cent of the total. In comparison, the South and border states contain 26 per cent of the relevant group of institutions. In the nation as a whole, C grades were made by 65 institutions. Of these, 7 are located in the South, including the border states, or about 11 per cent. Nor does the South, including the border area, make up its shortage of B's and C's with a preponderance of D's. It has only 15 per cent of the D's in the entire country, but 26 per cent of the reporting institutions. Alas, the southern region occupies a disproportionate number of places at the lower end of the ladder, namely, 52 per cent of the E's, and 57 per cent of the F's and below F's. The South had a distinct deficiency in the higher grades and a surplus in the lower grades.

Instead of counting the number of institutions receiving these grades we might have counted the number of faculty members in institutions in each grade class. On this count the South fares still worse. And, if it is compared not with the entire country, which includes the low-paying South, but with the non-South, the picture is even more depressing. Whereas only 16 per cent

[2] Inclusive of late reports. The South includes Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia; the border states include Delaware, District of Columbia, Kentucky, Maryland, Missouri, Oklahoma, Texas, and West Virginia.

of the total faculty members for which the AAUP received reports in the South are in institutions grading C or better in the Average Compensation Scale, 61 per cent of total faculty members outside the southern region, are in institutions grading C or higher. The regional differential is equally pronounced among the lower grades. It is appalling that 47 per cent of the faculty members in reporting institutions in the southern region were teaching in institutions with an E grade or lower in the Average Compensation Scale; in the non-South this figure is only 7 per cent.

What do these grading differences mean in terms of compensations? This is difficult to explain with a simple statement, and therefore I can indicate only the approximate order of magnitude. Since the compensation of full professor usually determines the grade of the scale, the discussion will be limited to this rank only. The average compensation of full professors under the C scale is $3,150 above that of the E scale. This would be 46 per cent. But this figure would be deceptive because an E may be anything that is below a D, which is $8,400 for a full professor, and thus the full spread between E and C might overstate the case. The difference, however, between an E and a C grade for this upper rank would be at least 19 per cent and very well might run 30 per cent or more.

We might also compare the average compensations of full-time faculty members. While you will recall the South plus the border states include 26 per cent of the total reporting institutions, they have only 11 per cent of the 73 institutions paying their faculty average compensations of $8,000 or higher. These eight institutions include Hopkins, Duke, the University of Virginia, North Carolina at Chapel Hill, the University of the South, Vanderbilt, Tulane, and Goucher College.

Whatever measure we use there can be no doubt that on the average the academic scholar in the South receives far less than his colleagues in the other parts of the country.

REGIONAL EARNINGS DIFFERENTIALS FOR LAWYERS AND PHYSICIANS

Before we can attempt to evaluate the regional differentials in the academic profession we must first compare them with income differentials in other professions, especially lawyers and doctors. One might hold that such comparisons may be misleading because in the legal and medical professions large portions are independent, not salaried income recipients, and the mobility of professional men may be different if they compare their earnings opportunities in different regions in terms of contractual income prospects rather than noncontractual income averages. Leaving this aside, let us look at whatever data there are on lawyers' and doctors' incomes in the South and in the country as a whole.

TABLE IV

NUMBER OF INSTITUTIONS AND FULL-TIME FACULTY MEMBERS IN THE SOUTHERN REGION AND IN THE ENTIRE UNITED STATES, CLASSIFIED BY RANGE OF AVERAGE COMPENSATION OF FULL-TIME FACULTY MEMBERS, AAUP COMPENSATION DATA FOR 1959–60

Range of Average Compensation	South plus Border States		Entire United States	
	No. of institutions	No. of full-time faculty	No. of institutions	No. of full-time faculty
$11,000 & above	0	0	2	589
10,500–10,999	0	0	2	649
10,000–10,499	1	169	5	4,632
9,500– 9,999	1	328	10	3,489
9,000– 9,499	2	568	8	3,932
8,500– 8,999	0	0	23	6,339
8,000– 8,499	4	539	23	7,773
7,500– 7,999	4	1,349	55	13,182
7,000– 7,499	9	2,368	75	11,777
6,500– 6,999	19	5,382	62	11,255
6,000– 6,499	17	1,804	36	3,908
5,500– 5,999	18	1,779	30	2,580
5,000– 5,499	6	510	17	869
4,500– 4,999	6	200	7	224
4,000– 4,499	1	65	1	65
	88	15,061	356	71,264

The latest usable study for lawyers' incomes by region, published in 1956, uses 1954 data.[8] It shows that the lawyers earned on the average about 20 per cent more in the entire U. S. than they did in the Southeast. (The lawyers in the Southwest had incomes about halfway between those in the Southeast and the national average.) This comparison between the Southeast and the national average differs from the comparison

[8] Maurice Liebenberg, "Income of Lawyers in the Post-war Period," *Survey of Current Business*, December 1956, pp. 26–36.

which we made for professors, where we used U. S. Office of Education data to compare the South with the non-South. But we are not interested in exact numerical results and can safely conclude that the order of magnitude of the regional differentials was about the same for the lawyers in 1954 and for full professors in 1959.[7] For average salaries of instructors and assistant professors the differential was smaller than for lawyers, and we have tried to explain this by the greater degree of competition and greater degree of mobility of beginning teachers.

For physicians' incomes we have no appropriate recent data and must go back as far as a study published in 1951 with 1949 data.[8] The data gave a picture entirely different from those of legal and professorial earnings. Medical incomes in the South compared favorably with the U. S. average. In the Southeast, average annual net earnings for physicians were about 1 per cent higher than for the nation as a whole, while in the Southwest the difference was sizeable, about 10 per cent above the national average.[9] Doctors incomes on the average were highest in the far West and lowest in New England and the Middle Atlantic states.[10]

Assuming that the samples are representative and that the situation has not completely changed, the economist can, of course, supply a good explanation for the discrepancies. The explanations to which he will resort are based on simple supply and demand analyses for regions with representative surpluses and shortages. The geographical regions used in the physicians' survey can be reconstituted to conform with those used by the U. S. Office of Education.

The North Atlantic region had about 86 per cent more doctors relative to population and 19 per cent more doctors relative to total personal income than the Southeast.[11] Hence, on this score, doctors' earnings in the South can be relatively higher. In other words, the South had a relative deficiency and would therefore be a potential net importer of M.D.'s. On the other hand, the North Atlantic had a relative surplus and would tend to be an export region. Should an economist wonder why prices are higher in an import region than in an export region?

If similar relationships appear in the production of new M.D.'s, the factors contributing to the differential would be further reinforced. The unfavorable production position of the Southeast is true to only a limited extent. In 1949 and 1950 the Southeast made a poor showing in the output of M.D.'s relative to population, but a superior showing relative to personal income.[12] In 1949 and 1950 the North Atlantic produced almost half again as many M.D.'s as the Southeast relative to population, but somewhat fewer than the Southeast per billion dollars of personal income.[13] Of the two measures, the ratio of M.D.'s conferred to population would exert greater influence over medical compensation, since the proportion of income spent for physicians' services tends to decline with higher incomes.[13] Therefore, the unfavorable ratio of M.D.'s conferred relative to population places the South in a continuing deficit position.

Now the question arises whether the South should not be also a net importer of academic

[7] Data were not available to make the South-non-South comparison.

[8] William Weinfeld, "Income of Physicians, 1929–49," *Survey of Current Business*, July 1951, pp. 9–26.

[9] For the Southeast, the mean plus or minus two standard errors ranged from $10,909 to $11,409; for the U. S., $10,962 to $11,154; and for the Southwest, $11,812 to $12,644. The means were $11,159, $11,058, and $12,228, respectively. Weinfeld, *op. cit.*, p. 19.

[10] The mean income of physicians in the far West was $12,827; in New England, $9,442; and in the Middle Atlantic, $9,772. In the far West the average income of physicians was about 16 per cent higher than the national average; in New England and the Middle Atlantic states, respectively, about 15 and 12 per cent less. Weinfeld, *op. cit.*, p. 19.

[11] By using data for the separate states, the geographical regions were reconstituted to conform with the regions as used by the U. S. Office of Education in their salary survey. Weinfeld, *op. cit.*, p. 19.

[12] To reduce the effects of the delay in placing some M.D. programs on a peacetime basis after World War II, data for earned M.D. degrees conferred by state were obtained for academic 1948–49 and 1949–50 and the average calculated for the two years. (U. S. Office of Education, *Earned Degrees Conferred by Higher Educational Institutions, 1948–49*; also same reference, 1949–50. Population data by state for 1950 were preferred over data for 1949 because of the increased accuracy of a census year and were obtained from the *Statistical Abstract of the United States for 1959*, p. 10. Data for per capita income for the geographical regions used by the U. S. Office of Education were calculated from the U. S. Department of Commerce, Office of Business Economics, *Personal Income by State since 1929* (U. S. Government Printing Office, 1956) and apply to 1949.

[13] For data on the per cent of income spent by individuals for physicians' services, see Weinfeld, *op. cit.*, p. 19.

personnel and hence pay more for professors than the regions which produce more Doctors of Philosophy.

THE DEFICIT REGION OFFERING THE LOWER PRICE

Unfortunately, usable data are not available for the proportion of earned doctorates employed on the faculties of institutions of higher education in the Southeast as contrasted with the North Atlantic, but data are available on earned doctorates conferred by geographical region. The difference between the South and the North Atlantic is immense. Relative to population the North Atlantic conferred in 1958 and 1959 more than three and one-half times as many doctorates as the Southeast and relative to personal income almost two and a half times as many.[14] A similar relationship prevailed in 1950. The Southeast has a large chronic production deficit relative to the North Atlantic and, for that matter, to the Great Lakes and Plains as well. While we have no data to test the hypothesis that as a region the Southeast is short of earned doctorates employed in the academic profession, the relatively lower Southern academic salaries and the annual production deficit indicate that this unfortunate situation probably exists.

If, as we suspect, the Southeast is a deficit region in both the production and stock of earned doctorates employed in colleges and universities, we should expect the qualified academic teacher to command a higher price in the South, but, in fact, the price is lower—indeed, very much lower. The explanation is not difficult. Higher education is not bought and paid for by the individual household. Considered as a collective want, education is paid for chiefly out of public funds and partly out of endowment incomes and the contributions of benefactors, and only to a very small part directly out of the consumers' pockets. Demand for education is therefore expressed merely as a desire of people to partake of a subsidized service supplied by government, philanthropists, and devoted alumni. The demand for educators is determined merely by the educational policy of the governments and the generosity of public benefactors.

If one could speak of such a thing as "need of education" or of a "social marginal productivity of funds allocated to education," one would probably agree that the South should invest more heavily in education. If the investment were more nearly at the appropriate level, this would probably imply a vastly increased demand for educators. Since the South is characterized as a deficit region in at least the production of educators and probably in the stock as well, this demand can be satisfied only by drastic increase in the price offered. As long as the present South–non-South differential in professors' salaries prevails, the South behaves as if it had a surplus of professors which it tries to diminish by exportation from the region. For industrial labor of lower skills this is precisely the situation. There is a continuing excess supply of unskilled and semi-skilled labor, which is continually relieved by migration to the North. Will anyone contend that this is also the picture in the market for academic personnel? Will anyone contend that there are too many qualified professors in the South who should be induced to migrate to the North? If not, then the only sensible response would be to remove the present differential and reverse it if necessary. If this is not done, the only result to be expected is a progressive increase in the quality differential of higher education in the South as against the rest of the country.

[14] Population and per capita personal income data for 1959 were calculated for the geographical regions used by the U. S. Office of Education in their academic salary survey from information given in Robert E. Graham, Jr., "General Rise in State Income in 1959," *Survey of Current Business*, August 1960, p. 17. Data on conferred doctorate degrees came from U. S. Office of Education, *Earned Degrees Conferred by Higher Educational Institutions, 1957–58*; preliminary data for 1958–59 were supplied directly by the U. S. Office of Education.

COMMUNICATIONS

THE *NON SEQUITUR* OF THE "DEPENDENCE EFFECT"

For well over a hundred years the critics of the free enterprise system have resorted to the argument that if production were only organized rationally, there would be no economic problem. Rather than face the problem which scarcity creates, socialist reformers have tended to deny that scarcity existed. Ever since the Saint-Simonians their contention has been that the problem of production has been solved and only the problem of distribution remains. However absurd this contention must appear to us with respect to the time when it was first advanced, it still has some persuasive power when repeated with reference to the present.

The latest form of this old contention is expounded in *The Affluent Society* by Professor J. K. Galbraith. He attempts to demonstrate that in our affluent society the important private needs are already satisfied and the urgent need is therefore no longer a further expansion of the output of commodities but an increase of those services which are supplied (and presumably can be supplied only) by government. Though this book has been extensively discussed since its publication in 1958, its central thesis still requires some further examination.

I believe the author would agree that his argument turns upon the "Dependence Effect" explained in Chapter XI of the book. The argument of this chapter starts from the assertion that a great part of the wants which are still unsatisfied in modern society are not wants which would be experienced spontaneously by the individual if left to himself, but are wants which are created by the process by which they are satisfied. It is then represented as self-evident that for this reason such wants cannot be urgent or important. This crucial conclusion appears to be a complete *non sequitur* and it would seem that with it the whole argument of the book collapses.

The first part of the argument is of course perfectly true: we would not desire any of the amenities of civilization—or even of the most primitive culture—if we did not live in a society in which others provide them. The innate wants are probably confined to food, shelter, and sex. All the rest we learn to desire because we see others enjoying various things. To say that a desire is not important because it is not innate is to say that the whole cultural achievement of man is not important.

This cultural origin of practically all the needs of civilized life must of course not be confused with the fact that there are some desires which aim, not as a satisfaction derived directly from the use of an object, but only from the status which its consumption is expected to confer. In a passage which Professor Galbraith quotes (p. 118), Lord Keynes seems to treat the latter sort of Veblenesque conspicuous consumption as the only alternative "to those needs which are absolute in the sense that we feel them whatever the situation of our fellow human beings may be." If the latter phrase is interpreted to exclude all the needs for goods which are felt only because these goods are known to be produced, these two Keynesian classes describe of course only extreme types of wants, but disregard the overwhelming majority of goods on which civilized life rests. Very few needs indeed are "absolute" in the sense that they are independent of social environment or of the example of others, and that their satisfaction is an indispensable condition for the preservation of the individual or of the species. Most needs which make us act are needs for things which only civilization teaches us to exist at all, and these things are wanted by us because they produce feelings or emotions which we would not know if it were not for our cultural inheritance. Are not in this sense probably all our esthetic feelings "acquired tastes"?

How complete a *non sequitur* Professor Galbraith's conclusion represents is seen most clearly if we apply the argument to any product of the arts, be it music, painting, or literature. If the fact that people would not feel the need for something if it were not produced did prove that such products are of small value, all those highest products of human endeavor would be of small value. Professor Galbraith's argument could be easily employed, without and change of the essential terms, to demonstrate the worth-

lessness of literature or any other form of art. Surely an individual's want for literature is not original with himself in the sense that he would experience it if literature were not produced. Does this then mean that the production of literature cannot be defended as satisfying a want because it is only the production which provokes the demand? In this, as in the case of all cultural needs, it is unquestionably, in Professor Galbraith's words, "the process of satisfying the wants that creates the wants." There have never been "independently determined desires for" literature before literature has been produced and books certainly do not serve the "simple mode of enjoyment which requires no previous conditioning of the consumer" (p. 217). Clearly my taste for the novels of Jane Austin or Anthony Trollope or C. P. Snow is not "original with myself." But is it not rather absurd to conclude from this that it is less important than, say, the need for education? Public education indeed seems to regard it as one of its tasks to instill a taste for literature in the young and even employs producers of literature for that purpose. Is this want creation by the producer reprehensible? Or does the fact that some of the pupils may possess a taste for poetry only because of the efforts of their teachers prove that since "it does not arise in spontaneous consumer need and the demand would not exist were it not contrived, its utility or urgency, ex contrivance, is zero?"

The appearance that the conclusions follow from the admitted facts is made possible by an obscurity of the wording of the argument with respect to which it is difficult to know whether the author is himself the victim of a confusion or whether he skilfully uses ambiguous terms to make the conclusion appear plausible. The obscurity concerns the implied assertion that the wants of the consumers are determined by the producers. Professor Galbraith avoids in this connection any terms as crude and definite as "determine." The expressions he employs, such as that wants are "dependent on" or the "fruits of" production, or that "production creates the wants" do, of course, suggest determination but avoid saying so in plain terms. After what has already been said it is of course obvious that the knowledge of what is being produced is one of the many factors on which it depends what people will want. It would scarcely be an exaggeration to say that contemporary man, in all fields where he has not yet formed firm habits, tends to find out what he wants by looking at what his neighbours do and at various displays of goods (physical or in catalogues or advertisements) and then choosing what he likes best.

In this sense the tastes of man, as is also true of his opinions and beliefs and indeed much of his personality, are shaped in a great measure by his cultural environment. But though in some contexts it would perhaps be legitimate to express this by a phrase like "production creates the wants," the circumstances mentioned would clearly not justify the contention that particular producers can deliberately determine the wants of particular consumers. The efforts of all producers will certainly be directed towards that end; but how far any individual producer will succeed will depend not only on what he does but also on what the others do and on a great many other influences operating upon the consumer. The joint but uncoordinated efforts of the producers merely create one element of the environment by which the wants of the consumers are shaped. It is because each individual producer thinks that the consumers can be persuaded to like his products that he endeavours to influence them. But though this effort is part of the influences which shape consumers' tastes, no producer can in any real sense "determine" them. This, however, is clearly implied in such statements as that wants are "both passively and deliberately the fruits of the process by which they are satisfied" (p. 124). If the producer could in fact deliberately determine what the consumers will want, Professor Galbraith's conclusions would have some validity. But though this is skilfully suggested, it is nowhere made credible, and could hardly be made credible because it is not true. Though the range of choice open to the consumers is the joint result of, among other things, the efforts of all producers who vie with each other in making their respective products appear more attractive than those of their competitors, every particular consumer still has the choice between all those different offers.

A fuller examination of this process would, of course, have to consider how, after the efforts of some producers have actually swayed some consumers, it becomes the example of the various consumers thus persuaded which will influence

the remaining consumers. This can be mentioned here only to emphasize that even if each consumer were exposed to pressure of only one producer, the harmful effects which are apprehended from this would soon be offset by the much more powerful example of his fellows. It is of course fashionable to treat this influence of the example of others (or, what comes to the same things, the learning from the experience made by others) as if it amounted all to an attempt of keeping up with the Joneses and for that reason was to be regarded as detrimental. It seems to me that not only the importance of this factor is usually greatly exaggerated but also that it is not really relevant to Professor Galbraith's main thesis. But it might be worthwhile briefly to ask what, assuming that some expenditure were actually determined solely by a desire of keeping up with the Joneses, that would really prove? At least in Europe we used to be familiar with a type of persons who often denied themselves even enough food in order to maintain an appearance of respectability or gentility in dress and style of life. We may regard this as a misguided effort, but surely it would not prove that the income of such persons was larger than they knew how to use wisely. That the appearance of success, or wealth, may to some people seem more important than many other needs, does in no way prove that the needs they sacrifice to the former are unimportant. In the same way, even though people are often persuaded to spend unwisely, this surely is no evidence that they do not still have important unsatisfied needs.

Professor Galbraith's attempt to give an apparent scientific proof for the contention that the need for the production of more commodities has greatly decreased seems to me to have broken down completely. With it goes the claim to have produced a valid argument which justifies the use of coercion to make people employ their income for those purposes of which he approves. It is not to be denied that there is some originality in this latest version of the old socialist argument. For over a hundred years we have been exhorted to embrace socialism because it would give us more goods. Since it has so lamentably failed to achieve this where it has been tried, we are now urged to adopt it because more goods after all are not important. The aim is still progressively to increase the share of the resources whose use is determined by political authority and the coercion of any dissenting minority. It is not surprising, therefore, that Professor Galbraith's thesis has been most enthusiastically received by the intellectuals of the British Labour Party where his influence bids fair to displace that of the late Lord Keynes. It is more curious that in this country it is not recognized as an outright socialist argument and often seems to appeal to people on the opposite end of the political spectrum. But this is probably only another instance of the familiar fact that on these matters the extremes frequently meet.

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ARE WAGE DIFFERENTIALS RESILIENT? AN EMPIRICAL TEST*

I. INTRODUCTION

Adam Smith was the first economist to set forth clearly the factors making for differences in wage rates. He observed that "... this difference arises partly from certain circumstances in the employments themselves, which, either really, or at least in the imaginations of men, make up for a small pecuniary gain in some, and counterbalance a great one in others; and partly from the policy of Europe, which nowhere leaves things at perfect liberty."[1]

The purpose of this paper will be limited in scope to a test of the resiliency of wage differentials when they are subjected to an autonomous shock in the form of a government fiat applied to the lower end of the wage scale. Section II examines wage differentials as they are discussed in traditional economic theory. Section III tests empirically the resiliency of wage differentials, and presents the conclusions.

* I am indebted to W. C. Cash, M. R. Colberg, R. A. Bradley, L. L. Lasman, S. K. Katti and to the editors of *Southern Economic Journal* for helpful comments and suggestions and to the Computing Center, Florida State University, for many of the statistical computations.

[1] Adam Smith, *The Wealth of Nations* (New York: Random House, 1937), p. 99.

II. TRADITIONAL THEORY AND WAGE DIFFERENTIALS

According to traditional theory, in any period of time and in any place there exists a set of differentials in wages in different occupations. These differentials are essentially the result of three kinds of forces.[3] The first are forces other than wage rates that affect the attractiveness of occupations. The second are forces that produce non-competing groups. The third are forces that make for incomplete adjustment to changes in demand and supply.

The first of these forces is summarized by the term "equalizing differences." Thus even if there is perfect competition and if people are all alike in abilities and tastes, money wage rates in different occupations would not be equal. A number of objective factors such as seasonal and cyclical variability of employment, length of training, direct cost of training, direct occupational expenses subsequent to training, length of working life in occupation and the pattern of earnings over the course of a working life will affect the financial equality of different occupations. The net effect of the operation of these factors, under conditions of competition and no differences in abilities and tastes, is to produce perfectly elastic supply curves for all occupations. Conditions of supply would determine relative wage rates. Demand would determine the number of people employed in a given occupation. All differences in wage rates would be equalizing and there would be no rents.

Another factor affecting wage differentials is the non-pecuniary advantages or disadvantages of an occupation to a given individual. Given differences in tastes and differences in evaluating non-pecuniary advantages or disadvantages of an occupation, the effect is to impart a slope to the supply curve. Indeed, if people choose occupations solely on the basis of non-pecuniary advantages and irrespective of pecuniary advantages the effect would be to produce a perfectly inelastic supply curve. Wage rates in this case would be determined by demand, and so would rents.

Normally, of course, the supply curve for a particular occupation is neither perfectly elastic nor perfectly inelastic. There are differences in tastes and in evaluation of non-pecuniary advantages and people do take into account pecuniary returns. The net effect is to produce upward sloping supply curves and equalizing differences at the margin.

The second set of forces giving rise to wage differentials are those arising from non-competing groups. Traditionally, it is argued that for a variety of reasons not all people are free to choose their occupations. Examples could be color, geographic immobility, and restrictions on entry. The effect is to reduce the freedom of people to choose occupations and so to prevent differences in wage rates in occupations from being primarily equalizing in nature.

The third set of forces are those arising from incompleteness of adjustment in the demand for or supply of labor. Thus any change in demand for the services of a particular occupation is likely to have much sharper effects initially than ultimately because the supply of labor for the occupation is likely to be much less elastic in the short run than in the long run.

On balance wage differentials do serve a useful function in allocating labor services into various occupations. Wage differentials are, in fact, an essential part of the price mechanism.[5] What happens to wage differentials when they are subjected to an autonomous shock in the form of a government fiat? The next section attempts to answer this question.

III. AN EMPIRICAL TEST

In order to test the resiliency of wage differentials when they are subjected to an autonomous shock, I use the method of weighted regression analysis which takes into account changes in fundamental relationships. Employed in the analysis are data collected by the BLS for the purpose of assessing the economic effects of the $1.00 minimum wage.[4] These data are for

[3] This section draws from the discussion in Milton Friedman and Simon Kuznets, *Income from Independent Professional Practice* (New York: National Bureau of Economic Research, 1954), Chapters 3-4 and Milton Friedman's Lectures in Price Theory given at the University of Chicago.

[5] See, for example, John V. Van Sickle, "Regional Economic Adjustments: The Role of Geographical Wage Differentials," *American Economic Review: Papers and Proceedings of the 66th Annual Meeting of the American Economic Association*, May 1954, pp. 381-392.

[4] U. S. Department of Labor, Wage and Hour and Public Contracts Division, *Studies of the Economic Effects of the $1.00 Minimum Wage,*

TABLE I

"BEFORE" AND "AFTER" SURVEY DATES FOR SELECTED LOW WAGE INDUSTRIES AFFECTED BY $1.00 MINIMUM WAGE

Industry	"Before"	"After"
1) Men's and Boys' Shirts (U. S.)	February 1956	October 1956
2) Canning and Freezing in Florida	January–February 1956	January–February 1957
3) Raw Sugar Industry in Louisiana	November–December 1955	November–December 1956
4) Workshirt Industry in Southeast	February 1956	April 1957
5) Cigar Industry in the Southeast	February 1956	October 1956
6) Seamless Hosiery Industry in the Southeast	February 1956	April 1957
7) Fertilizer Industry in the South	April 1955	April 1957
8) Wooden Container Industry in the South	February 1956	April 1956

Source: U S. Department of Labor, Wage and Hour and Public Contracts Division, *Studies of the Economic Effects of the $1.00 Minimum Wage*, "Effects in Selected Low Wage Industries and Localities" (Washington, D. C.: U. S. Government Printing Office, January 1959).

average hourly earnings in selected low wage industries before the new minima went into effect and shortly after. For purposes of this paper, I have used average hourly earnings in given occupations as indicators of changes in the price of labor even though there are variations in these earnings, both for an individual and for groups of wage earners, which cannot be regarded as changes in the price of labor.[8]

Another limitation is that the test results do not yield a "true" comparison of wage differentials discussed in the theoretical section. Instead these results yield an index in the form of a weighted regression equation for each industry which serves as an approximation to the behavior of occupational wage differentials in that industry. Taken together, however, these test results for the various low wage industries do provide a useful insight into the behavior of occupational wage differentials when they are subjected to an autonomous shock.

The low wage industries selected are those judged by the "BLS Studies" to have been affected by the new minima. I have selected from these industries only those for which wage and employment data are relatively complete for the years 1955 and 1956. These industries, located primarily in the South and Southeast, are Men's and Boys' Shirts, Canning and Freezing, Workshirts, Cigar, Seamless Hosiery, Fertilizer, and Wooden Containers.

The limitataions of the above data and of the BLS studies have been discussed elsewhere.[9] It is not the purpose of this paper to examine in detail the economic effects of the $1.00 minimum wage. For such a purpose the usefulness of data contained in the BLS studies is limited. But for purposes of this paper the data for the selected low wage industries are adequate. The data indicate average hourly earnings and employment in given occupations and industries shortly before and shortly after the new minima went into effect.

The new minima were enacted in August 1955 and went into effect in March 1956. Wages and related data were obtained in BLS surveys of selected low wage industries before, immediately after, and about a year after the effective date of the minima. The purpose of the survey was to observe the direct effects of the new minimum wage. For purposes of this paper I have selected for the various industries the dates in Table I. Most of the industries have had several months in which to adjust.

In order to test the resiliency of wage differentials a weighted regression analysis for the period 1955–1957 with the following series is conducted:

"Effects in Selected Low Wage Industries and Localities" (Washington, D. C.: U. S. Government Printing Office, January 1959). For purposes of brevity these studies hereafter will be referred to as the "BLS Studies."

[8] See, for example, John T. Dunlop, *Wage Determination Under Trade Unions* (New York: Augustus M. Kelley, 1950), p. 19.

[9] See, for example, George Macesich and Charles T. Stewart, Jr., "Recent Department of Labor Studies of Minimum Wage Effects," *The Southern Economic Journal*, April 1960, pp. 281–290.

1) Series:

W = Weight—number employed in a given occupation and industry "after" the new minima went into effect. These "after" dates are presented in Table I and are either for the end of 1956 or the beginning of 1957 except the date of Wooden Containers.

X = Wage rate in a given occupation in a given industry "before" the new minima went into effect. These "before" dates are presented in Table I and are either for early 1956 or early or late 1955. These observations are weighted by W above in order to give more importance to industries employing more people after the new minima went into effect.

Y = "Before" wage rate minus "after" wage rate in a given occupation in a given industry. The definition of Y is in absolute terms rather than in relative terms because for purposes of this paper we are interested in the absolute compression of wage differentials. The observations were weighted by W above. This is done in order to give more importance to industries employing more people.

By the least squares method a linear function of the form $Y = \hat{\alpha} + \beta X$ was fitted to the above observations. The weighted regression equations for the various industries are presented in Table II. In order to test for the resiliency of wage differentials the following null hypothesis is tested.

2) Ho: $\beta = 0$.

a) If Ho is accepted then wage differentials have neither been compressed nor expanded in the period 1955–1957.

b) If Ho is rejected and if the estimate of $\beta < 0$, then wage differentials have been compressed in the period 1955–1957.

c) If Ho is rejected and if the estimate of $\beta > 0$, then wage differentials have been expanded in the period 1955–1957.

The evidence in Table II is impressive in that 14 out of the 16 regression coefficients are negative. A statistical test involving this result and utilizing the size of the coefficients as well as their signs is the "Wilcoxon matched-pairs signed-ranks test." We may apply the Wilcoxon test to the evidence presented in Table II.[7] "T" is the statistic on which the Wilcoxon test is based.

[7] See Sidney Seigel, *Nonparametric Statistics* (New York: McGraw-Hill Book Company, 1956), pp. 77–83.

TABLE II

RESULTS OF WEIGHTED REGRESSION ANALYSIS FOR SELECTED INDUSTRIES, 1955 TO 1956

Industry	Number of Employment Categories	Weighted Regression Equation
1) Men's and Boys' Shirts (U.S.)		
Men	7	$Y = .22 - .09X$
Women	12	$Y = .26 - .12X$
Men and Women	19	$Y = .23 - .08X$
2) Canning and Freezing in Florida (Men)	10	$Y = .10 - .02X$
3) Raw Sugar Industry in Louisiana (Men)	14	$Y = .27 - .06X$
4) Workshirt Industry in the Southeast		
Men	5	$Y = .23 - .09X$
Women	5	$Y = .41 - .22X$
Men and Women	10	$Y = .35 - .17X$
5) Cigar Industry in the Southeast		
Men	6	$Y = .13 - .04X$
Women	11	$Y = .01 + .09X$
Men and Women	17	$Y = .02 + .06X$
6) Seamless Hosiery Industry in the Southeast		
Men	4	$Y = .12 - .06X$
Women	9	$Y = .55 - .54X$
Men and Women	13	$Y = .26 - .16X$
7) Fertilizer Industry in the South (Men)	18	$Y = .16 - .03X$
8) Wooden Container Industry in the South (Men)	13	$Y = .27 - .11X$

Source: U. S. Department of Labor, Wage and Hour and Public Contracts Division, *Studies of the Economic Effects of the $1.00 Minimum Wage*, "Effects in Selected Low Wage Industries and Localities" (Washington, D. C.: U. S. Government Printing Office, January 1959).

Here "T" is the sum of the positive ranks or the sum of the negative ranks, whichever is smaller.

The null hypothesis presented in this paper is that Ho:$\beta = 0$. In terms of the Wilcoxon test the sum of the negative ranks equals the sum of the positive ranks. H_1:wage differentials differ in the period "before" and "after" the new wage minima went into effect. That is, the sum of the negative ranks does not equal the sum of the positive ranks. Let $\Pi = .01$ and $N = 12$, the total number of independent regression coefficients presented in Table II. The category "men and women" is not independent and so is disregarded in applying the Wilcoxon test. Since $N < 25$ we are able to use the tabled critical values of "T."[8] A two-tailed region of rejection is appropriate since we do not predict the direction of difference. Thus the region of rejection consists of all values of "T" which are so small that the probability associated with their occurrence under Ho is equal to or less than $\Pi = .01$ for a two-tailed test. For the evidence presented in Table II, $T = 7$. Tables for the Wilcoxon Test show that for $N = 12$, a "T" of 7 allows us to reject Ho at $\Pi = .01$ for a two-tailed test. Thus we reject Ho in favor of H_1 and conclude that wage differentials differ in the period "before" and "after" the new wage minima.

It should be noted, of course, that in order to show unequivocally that the minimum wage law is responsible for the compression of wage differentials it is necessary to establish (1) that the compression during the period studied is greater than at other times; (2) that it is greater in industries analyzed than in industries not likely to be affected by the new minimum wage law. I have not established these contentions in this paper. I draw from recent BLS studies of the minimum wage where these contentions apparently are established. The results presented in this paper, however, confirm quantitatively the observation made in the BLS studies. The effect of the increase in the minimum wage from \$.75 to \$1.00 is to compress wage differentials in those industries affected by the shock, at least in the period for which data are available.

These results are consistent with an implication of "traditional" theory that workers in higher wage occupations are imperfect substitutes for those in lower wage occupations. The wages of those directly affected by the rise in the minimum wage rise more than wages of those not so directly affected. The results, of course, are also consistent with another implication of "traditional" theory that wage differentials arise in part from incompleteness of adjustment in the demand for or supply of labor.

This paper does not attempt to appraise the "benefits" from a rise in the minimum wage. The fact that in Table II estimates of α are positive in all cases suggests that all workers do "benefit" in the sense that their hourly earnings increase. It is in this sense perhaps that sponsors of minimum wage legislation argue that everyone, including workers well above the floor, benefit from a rise in the minimum wage.[9] In order to consider these "benefits" seriously one must also take into account employment and other effects that are not discussed in this paper.

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[8] *Ibid.*, Table G, p. 254.

[9] See, for example, the exchange between Senator Cooper and Secretary of Labor Mitchell in *Hearings Before the Subcommittee on Labor of the Committee on Labor and Public Welfare, United States Senate*, "To Amend the Fair Labor Standards Act," 86th Congress, 1st Session (Washington, D. C.: U. S. Government Printing Office, 1959), pp. 870–71.

BOOK REVIEWS

Essays in Economic Thought: Aristotle to Marshall. By Joseph J. Spengler and William R. Allen. Chicago, Ill.: Rand McNally and Company, 1960. pp. 800. $8.50.

This collection of essays is a significant addition to the materials available for the teaching of advanced courses in the development of economic thought. These essays are analyses of, not selections from, famous contributions to economic theory. The organization of the book into six major periods corresponds generally to the usual classification in most textbooks: (1) Introduction, (2) Scholasticism and Mercantilism, (3) Pre-Smithian Eighteenth Century Economics, (4) The Classical School and Marx, (5) The Historical School and Institutionalism, and (6) Marginalism and Neoclassicism. Each section of the book is preceded by a brief introductory statement. Practically all the essays have appeared in well recognized economic journals, but they will be much more easily available for class use in book form.

The only essay in the first section is by Joseph J. Spengler, "The Problem of Order in Economic Affairs." In the second section the most interesting essay is the one by William D. Grampp on "The Liberal Elements in English Mercantilism" which points out that severe unemployment in the 16th and 17th centuries led to a macro-economic emphasis upon the importance of money. He argues that this monetary emphasis does not mean that the writers of the period did not understand the operation and significance of competitive markets. Other topics dealt with are just price and the transition from scholasticism to mercantilism.

In the third section Marcus Arkin has a significant article assessing the economic writings of David Hume. Two articles by Joseph J. Spengler deal with the theories of Cantillon and trace the development of Say's Law of Markets from the physiocrats through Adam Smith, William Spence, and James Mill. The voluminous footnotes throughout the book but particularly in the articles by Professor Spengler will be extremely valuable in their suggestions to students for further reading in these periods.

The fourth section, dealing with the classical school and Marx, occupies almost a third of the book and contains several valuable essays. Jacob Viner's article on "Adam Smith and Laissez-Faire" argues that Smith's support of laissez-faire was much less rigid than usually believed, since the ideas on natural harmony expressed in his later writing were much less doctrinaire than those in the earlier *Theory of Moral Sentiments*. T. W. Hutchison in "Bentham as an Economist" demonstrates that Bentham departed significantly from contemporary classical thought in his ideas about the relationship of paper money creation to production and consumption, the utility approach to value, and the role of government. The best article on Marx is Bernice Shoul's essay entitled "Karl Marx and Say's Law" which argues that Marx accepted Say's Law in a barter economy, but believed that the possibility of a crisis existed in a money economy. The tendency toward a falling rate of profit then caused the crisis which the use of money had made possible. Stigler and Cassels have valuable articles on Ricardo.

Section five is the shortest and probably the least satisfying part of the book. The introduction gives an adequate summary of the development of critical ideas along historical and institutional lines. This introduction is supplemented by Paul Homan's factual recital taken from *The Encyclopaedia of the Social Sciences* of the contributions made by various authors of the institutional school. The only analytical article in the section is a very good one by Henryk Grossman, "The Evolutionist Revolt Against Classical Economics." Since Grossman's chief thesis is that dynamic or evolutionary thinking entered the stream of economic thought primarily through the writings of Condorcet, Saint-Simon, Sismondi, Jones, and Marx, it is obvious that the book lacks any effective analysis of the ideas and contributions of the German writers.

Section six contains ten well selected articles dealing with marginalism and neoclassicism. One of the most interesting and valuable articles is Arthur H. Leigh's essay on "Von Thunen's Theory of Distribution and the Advent of Marginal Analysis." Von Thunen's theories dealing with the marginal analysis of wages and interest and his mathematical formulations are well summarized. George J. Stigler's essay on "Development of Utility Theory" is well written, but his article on Menger is more laudatory than many economists would feel to be justified. Other worthwhile contributions are by A. J. Nichol on Cournot's theory of duopoly price, Milton Friedman on Walras' system, Carl G. Uhr on Wicksell, and G. F. Shove on Marshall. Nicholas Kaldor's essay, "Alternative Theories of Distribution," is interesting and valuable, but unfortunately it is printed only in part and leaves the reader with a dissatisfied feeling that the treatment is incomplete (which it is).

Spengler and Allen have performed a real service to the teachers of economics by making these essays available. While there is some lack of

balance in the selections, this defect may result from the lack of available essays which would correct the difficulty. The introductory statements preceding the various sections are also uneven in their treatment; sometimes they present very clearly the basic trends in the development of thought, but in other sections the treatment degenerates into a summary, author by author, of the writing in the period. The book also lacks any concluding statement that would give cohesion to the ideas previously expressed. Despite these shortcomings this collection of essays is a book which every teacher of the development of economic thought will find most useful in making assignment of readings to advanced students.

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A History of Economic Thought. By Overton H. Taylor. New York: McGraw-Hill Book Company, 1960. Pp. xix, 524. $7.75.

This book is both broad and narrow in its scope: its approach is unprecedentedly comprehensive in its inclusion of philosophy and political thought along with economic thought; but it limits itself to a few schools of thought and a few economic thinkers—Quesnay, Smith, Ricardo, Malthus, J. S. Mill, Marx, Marshall, Keynes and, to a lesser degree, E. H. Chamberlin.

The author regrets the tendency of many scholars to value only the "strict sciences" and despise "all efforts to think ... as rationally as possible about the great questions of vital moment for human civilization." He denies that civilized man can live by scientific knowledge alone; societies which seek to do so become "... increasingly efficient and potent, but at the same time increasingly barbarous." He confesses to a missionary desire "... to convert more fellow-economists into interested students ... of the diverse general views or perspectives on all human affairs which formerly concerned all philosophical political economists."

Professor Taylor's attachment is, he says, to classical liberalism—"the philosophy and vision of societies of largely free individuals, under limited governments ... of the liberal-democratic kind, and with economic activities and relations organized mainly in systems of free, private enterprises and competitive markets." He documents this attachment by allotting fifty-three pages to John Stuart Mill (although according him second rather than first rank among the "great thinkers") while employing thirty-nine pages to cover Marx.

It should not be concluded, however, that Professor Taylor is a 19th century laissez-faire purist. He considers Keynes' work vitally important, although he questions the use of such terms as "The Keynesian Revolution" and "The New Economics," holding that Keynes revolutionized only a part of economic analysis—not all. To him, Keynes was relatively conservative in his aims, seeking only to cure what had always been capitalism's greatest weakness—"proneness to recurrent, devastating depressions, with mass unemployment—and removing the main cause of subversive, radical attacks upon it." I should like to add that the exposition of Keynesian economics is the most lucid this reviewer has ever read, and the evaluation of the policy implications and limitations of Keynesian analysis is well-balanced and penetrating.

Taylor emphasizes the philosophic predecessors of Smith, especially Hutcheson, and he thoroughly discusses Smith's essays on science and his *Theory of Moral Sentiments*, which he recommends reading in full.

Marx's philosophy and economics are presented accurately enough, although devastating criticisms are leveled both at the man and at his theories. His labor theory of value and his theory of surplus value are termed "... that mass or labyrinth of mystery and folly." Elsewhere he states that "the element of utopianism in the thought of Marx was its greatest weakness;" and he refers to "... the streak of madness in the genius of Marx which has fatally affected the character and results of his vast influence." However, he believes that there were many insights in Marx's thought that "... are of potential value to all inquiring minds regardless of their political views."

Chamberlin has contributed more significantly to an understanding of current economic theory, in Taylor's view, than most histories of economic thought concede to him, although he is not cited by the author as one of the "great economic thinkers."

As a teacher of the subject, I should not recommend this as a textbook for undergraduates in courses in a history of economic thought. However, instructors and graduate students in economics, as well as more serious laymen, should find this book stimulating, and a valuable antedote for excessive specialization.

One must add a criticism of the book's literary style. It was based upon Prof. Taylor's lectures, and this has produced excessively lengthy and painfully involved sentences throughout. It is regrettable that a significant contribution to this field was not revised into more readable composition. Even so, Professor Taylor succeeds admirably in achieving his stated objective of correlating economic, political and philosophic thought in such a way that the various parts do indeed brilliantly "mutually illuminate each other."

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Economic Doctrines of Knut Wicksell. By Carl G. Uhr. Berkeley and Los Angeles, Calif.: University of California Press, 1960. Pp. xv, $7.50.

Torsten Gårdlund's recent biography of Knut Wicksell (Swedish edition, 1956, and English edition, 1958) is the first extensive account of Wicksell's life. Professor Uhr's book, on the other hand, is the first systematic and detailed analysis of his contributions to economics. Among the economists of the last century, there have been few with the breadth of interests, energy, and ability possessed by Wicksell. It is thus somewhat of a herculean task, even though armed with modern weapons and the wisdom of hind-sight, to attempt a critical evaluation of his diverse works.

The author presumably had to choose between presenting essentially a one-man (i.e., his own) commentary and a synthesis of a long traditon of Wicksell Scholarship. Uhr chose primarily the former course, despite his prefatory statement that he had incorporated the "new materials" appearing in the dacade since he first prepared the manuscript as a doctoral dissertation. Now it can be argued that the main trouble with Wicksell scholarship is the preponderance of one-man commentaries. This procedure not only entails, to use Myrdal's term, considerable "unnecessary originality," but also fails to utilize some really incisive work by other commentators. Thus, to cite only a few examples, we find, not even in the scanty bibliography, no reference to Ragnar Frisch's brilliant paper on Wicksell's whole theoretical edifice, to Friedrich Lutz' extensive discussion of Wicksell's theory of capital and interest, to Ursula Hicks' and R. A. Musgrave's work on the Wicksellian theory of tax shifting and incidence, or to either Howard Ellis' or Arthur Marget's perceptive remarks on Wicksell's monetary theory.[1]

[1] R. Frisch, "Frisch on Wicksell," in H. W. Spiegel, ed., *The Development of Economic Thought* (New York: John Wiley & Sons, 1952), pp. 652–99, and also his earlier paper, "On the Notion of Equilibrium and Disequilibrium," *Review of Economic Studies*, III (1936), pp. 100–5; F. A. Lutz (*Zinstheorie* (Tübingen: J. C. B. Mohr, 1956); Ursula Webb (Hicks), "Taxation and Production: The Wicksell Analysis," *Review of Economic Studies*, II (1934), pp. 18–30; R. A. Musgrave, *The Theory of Public Finance* (New York: McGraw-Hill, 1959), pp. 392–9; H. S. Ellis, *German Monetary Theory, 1905–1933* (Cambridge: Harvard University Press, 1937); A. W. Marget, *The Theory of Prices*, I (New York: Prentice-Hall, 1938). An extensive bibliography on Wicksell may be found in this reviewer's unpublished doctoral dissertation, completed in 1958 at the University of Michigan, *The Wicksellian Tradition in Swedish Macroeconomic Theory* (Ann Arbor: University Microfilms, 1959), pp. 379–98.

The book is reasonably well organized, roughly following the topical order of *Lectures on Political Economy*, with brief biographical and summary chapters tacked onto the beginning and a final chapter summarizing Wicksell's non-technical pamphlets and articles on population and economic progress. The level of exposition throughout, however, is extremely uneven, which forces the professional economist to experience cycles of boredom and interest, while the uninitiated are likely to endure cycles of the opposite phase. Thus, Chapter III leads us through a largely verbal and simple discussion of price theory, liberally sprinkled with "background material." Then we plunge into four highly abstract chapters on distribution theory, with the emphasis on capital and interest; this reviewer's impression of the net effect of these exercises is best stated in Wicksell's own words:

> ...Such a result, once found, may as a rule be derived by much simpler means than the mathematical apparatus which was used to find it.

Chapter VII returns to purely conversational level and is concerned with Wicksell's work in public finance, although little attention, none of it precise, is given to Wicksell's pioneering work in the theory of tax shifting in a model involving capital formation. The chapter does contain interesting discussions of his little known popular tracts and statements prepared for the Swedish government on the subject of taxation. Chapter IX then summarizes Wicksell's limited ventures into general equilibrium theory.

The next two chapters treat Wicksell's basic monetary theory, his later retrenchments in the course of both theoretical and practical polemics, and that work of the early "Stockholm School" (chiefly, Lindahl and Myrdal) which may be construed as "immanent criticisms" of Wicksell. After the earlier doses of algebra and geometry, we find, surprisingly, with the exception of a numerical example, all of the arguments presented on a verbal level. The exposition, while not imparting any great precision to the several "cumulative process" models, is of good quality and reasonably complete. In comparing Wicksell's ideas on monetary theory and policy with more modern views, Uhr makes the following observation, so perceptive as to demand quoting:

> Wicksell's monetary analysis attempted only to solve one part of the problem of economic stability in a dynamic world. This was to be done by arranging the character and behavior of monetary institutions in a manner calculated to elicit responses from entrepreneurs and from other income-recipients (at the point when they "dispose" of or allocate their disposable incomes as between consumption spending and savings) which were

on a priori grounds expected to approximate the design and conditions of monetary equilibrium. Rational monetary policy was expected to "slant" price and other relevent economic data on which, at the microeconomic level, members of these groups base their decisions, so as to bring out their "normal" responses. In the aggregate, at the macroeconomic level, these responses were thought capable of preserving dynamic equilibrium with narrow fluctuations around the economy's potential trend of growth. The benevolent "unseen hand," which proved unreliable after the abandonment of Say's law, was to be replaced by rational, hence also benevolent, economic policy—monetary as well as non-monetary. (Pp. 248–9.)

The final chapter, as mentioned earlier, discusses, on a fairly low level, Wicksell's ideas on social reform and economic progress.

Several gaps in this global presentation of Wicksell's views are worth noting, as well as a few errors. In contrast to his 1951 paper ("Knut Wicksell—A Centennial Evaluation," *American Economic Review*, XLI, pp. 829–60), where he dissociated Wicksell from quantity theories, Uhr largely avoids the issue of Wicksell's place in any kind of non-Swedish theoretical tradition in price level theory. Related to this is Uhr's apparent reluctance to locate Wicksell in monetary interest rate theory and in business cycle theory. Further, there is no mention of a recurrent controversy with Cassel, in which Wicksell answered the charge of the non-observability of the "normal" rate of interest with the comment that "heat would still exist even if there were no thermometers."

There is some question, as opposed to the views of both Uhr and Stigler, whether Wicksell ought properly to be credited with being on the scent of the product exhaustion theorem in *Value, Capital and Rent*, the more so because of his own clearly stated reservations regarding what he called "Thünen's Law." That later he himself never made any claims for his earlier analysis would seem to affirm this opinion. Uhr makes the "Ricardo effect" synonymous with "forced saving," which may arouse objections. Finally, he is clearly wrong in stating that, in his work in public finance, Wicksell "dealt only with problems of revenue or taxation, to the total neglect of the equally important problems of the uses to which revenues are to be put." To make such an assertion is to miss the point of the "voluntary exchange" theory of the public budget, to which Wicksell was an important contributor; the main advantage of this theory, in principle, is its integration of both sides of the budget.

WILLIAM P. YOHE

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The Rise of the Marginal Utility School, 1870–1889. By R. S. Howey. Lawrence, Kan.: University of Kansas Press, 1960. Pp. 271. $7.50.

The principle of marginal utility as to which each increase in the rate of consumption will entail a decrease in satisfaction, has been playing a prominent role in explanations of market price and consumer behavior throughout the last generations. Its commonly known it took its slow, but decisive course when pioneering writers, particularly in the second half of last century, became increasingly dissatisfied with the classical cost theory of value, substituting the "objective" cost components by "subjective" determinants, later hazily called utils. Motive for the basic change was the discovery of the marginal principle; market price was to be explained as the primary result of the utility a consumer would derive from the purchase and use of the last unit of any commodity or service. The consumer, the marginalists thought, was in personal equilibrium, when the price that he paid for each of the commodities he acquired, was proportional to the satisfactions yielded by each commodity's last unit. In this position, no shift in the spending pattern could increase his gratifications. Senior saw the main consequence of the utility approach in cost affecting price only indirectly by supply. It seems well justified to undertake a specific study on the emergence of such revolutionary economic thinking which represents one of the important steps in the neoclassical reconstruction of classical economic theory.

Professor Howey has done a thorough job to venture such an attempt by dealing with the period 1870 through 1889, marked at the beginning by the appearance of Jevons' *Theory of Political Economy* and Menger's *Grundsätze der Volkswirtschaftslehre*, and at the end by Böhm-Bawerk's second volume of *Kapital und Kapitalzins* and Wieser's *Der natürliche Werth*, with L. Walras' *Éléments d'économie politique* pure in between. Jevons, Menger, and Walras have become the generally recognized founders of modern utility theory. Insofar, the line followed by the author is not unusual. His contribution, however, is more than a monograph of economic thought in the sense of a formal record of theories and their paladins. The virtue the author may claim for his book is that it is putting forth considerable effort to accomplish what is uncertain and therefore difficult in a special way—the disclosure of the mode of formation of a concept developed by "men who wrote above their time," as Schumpeter would put it.

The author justifies his study by trying 1. to complement "the earlier partial histories ..., 2. ... to provide a sounder footing for other investigations ..., 3. ... to temper ... interpretations developed in other historical accounts." In this conjunction his major request is to banish "the presumption that acceptance of the idea of marginal

utility came quickly." This, indeed, is a rather ambitious goal in face of the tremendous literature directly or indirectly related to the utility concept in value theory which has been accumulated over the last eighty years. As far as the improvableness of histories of economic thought is concerned, it may be true that all too often they have neglected to place proper emphasis on the provocative character of the marginal utility school, or associated its origin with different men or periods. On the other hand, it has to be recognized that in the course of time and as a whole the morphology of the idea has been well brought to life. To illustrate this there even would be no need to go back to greats such as Schumpeter, Knight, or Stigler. It would suffice to consult established textbooks. Professor Howey's study does not widen the framework so much as it elucidates the honologies and metamorphoses a great deal which have governed the emergence of the school in question. This probably is its prime merit.

The writer's assertion that it took a long time for marginal utility economies to *settle* in its right place, repeats a well known fact. It was here as in almost any school of thought; the underlying philosophies seldom have been developed by one man only or a few. The distinctive appellation "founder of a school" is usually attributed to those who have "elaborated" on an object of thought more than anybody else before them. In the case of the central doctrine of marginal utility, neither the triumvirate Jevons-Menger-Walras nor the Austrians has newly conceived the principle; a good many presentations of similar precept can be found before 1870. It may seem more the degree of clearness of these contributions which would determine when or with whom to start, whether with Bentham's pain and pleasure comparisons who again by his own modest, too modest, admission owed "everything" to Adam Smith, with the unfortunate "anticipator" Gossen, or with the brilliant, but not in every respect constructive, Senior. "The utility theory just has to wait for the *fullness of time* and to be stillborn many times before it could live" (F. H. Knight). The opposition from the historical school in Germany gave a good example for this statement.

Needless to say, the foregoing qualifications do not deny the piloting role of certain economists who have advanced the theory to dominance or refined it into laws of demand, such as the members of what Eric Roll calls the first generation of modern marginal utility theorists, namely the "founders" including H. H. Gossen "whom one is obliged to mention in company with them" (Roll), and the "second generation" of the school with A. Marshall as the English, F. v. Wieser and E. v. Böhm-Bawerk as the Austrian representatives, and the Italian V. Pareto, successor of L. Walras at Lausanne. Into this sequence, no doubt, belongs J. B. Clark, the "independent discoverer of marginal utility" in the United States.

The marginal utility functions of goods and services as explanation of demand behavior have contributed much to price-output-distribution analysis, and to shifting economics on a more scientific and realistic basis. The pertinent models and their capacity to be used as instruments to demonstrate basic demand-supply relationships in true life often may create problems, as the economic effects of marginal utility in order to be unfolded, presuppose a very free market and consumer sovereignty—assumptions which often have become foreign, particularly to the realities of a changing world. Nevertheless, though, and despite many an evidence of administering prices, there can never be any distrust as to the ultimate origin of price itself; under all circumstances the market price is the result of evaluations with human desires as their base. Hereby it is irrelevant whether the appraisal is done by the buyer or by those who "manage" for him.

Professor Howey has not included controversies on the principles of marginal thought as expounded in more recent developments of economics. This, however, cannot be considered a shortcoming of a book exclusively devoted to the description of a gradual rise of a theory in its heydays. Taken as such it is a record to be welcomed.

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The Economic Point of View: An Essay in the History of Economic Thought. By Israel M. Kirzner. Princeton, N. J.: D. Van Nostrand Company, 1960. Pp. xv, 228. $5.50.

This book in the William Volker Fund Series in the Humane Studies grew out of a doctoral dissertation written at New York University under Ludwig von Mises, who wrote the Foreword. It is not a history of economic thought in the usual sense, but rather a history of the successive conceptions that economists have had historically about the basic subject matter of economics. It is a discussion of the epistemological character and logical method in economics. The objective is to produce a definitive definition of economics and to determine the proper "economic point of view." Thus the book is limited to a very important, though small, area of the history of economic thought. The main inquiry, however, does not concern itself with the scope of all economics, but rather that of economic theory only.

The author traces in detail the nature of the "economic point of view" held by economists over the past two hundred years, from the English

Classical economists down through contemporary economists. The book is probably the most ambitious one of its type since the earlier studies of Supino in 1883, Neuman in 1889, and Schumpeter in 1908. All of the important economists during the last two centuries are covered, but the names of Amonn, Cannan, Auguste Comte, Croce, Hayek, Jevons, Knight, Macfie, Marshall, Menger, Mises, Mitchell, Pareto, Talcott Parsons, Robbins, Schäffle, Senior, Smith, Tagliacozzo, Max Weber, Whateley, and Wicksteed receive special attention. A number of them are more noted for their work in sociology, politics, and philosophy perhaps than in economics.

The ideas of Max Weber, Lionel Robbins, Frank Knight, and von Mises are examined critically, and the famous controversy between Croce and Pareto is analyzed. So is Tagliacozzo's solution to the "Rhine-wine" problem involved in the latter controversy. Reference is also made to the equally famous "Methodenstreit" between the German Historical and Austrian Schools in which both the English Classical and Historical Schools were involved.

The first chapter of the book is devoted to the definition of the "economic point of view," and with the various criteria of definition and the various systems of classification of definitions. To use Fraser's classification of "A" and "B" type definitions, there has been a definite trend in the twentieth century toward the latter type definition involving a particular aspect of affairs in general such as the "necessity of reconciling numerous conflicting ends with an inescapable scarcity of means." The "A" type definition involves a particular department of affairs such as "wealth or material welfare" which was the proper subject of study for the English Classical economists.

The other chapters successively deal with the various definitions of economics such as the science of wealth and material welfare, the science of avarice or getting the most for the least, the science of exchanges or Catallactics (to use Whateley's term), the science of money and wealth, the study of economizing activities (scarce resources and insatiable wants), and finally as the science of human action or the praxeological view of economics.

All definitions have been adhered to at one time or another, but currently the last two are the more widely held views. The first of these two definitions is associated with the name of Lionel Robbins, the second with Ludwig von Mises. The author argues that the latter or praxeological definition is the superior definition of economics and both it and its progenitor, von Mises, deserve much more popularity and recognition than they have received.

Robbins' definition, "the science which studies human behavior as a relationship between ends and scarce means which have alternative uses," is widely accepted, but the author rejects it because he feels that it involves only limited recognition of the praxeological nature of economics. He accepts certain criticisms of the definition without analyzing their validity, such as, it is very formal, abstract, and arid, it lacks in concern for the purposive element in human behavior, it involves an almost mechanical rationality in man in matching abstract means to abstract ends, etc.

The praxeological definition supposedly is free of all of these weaknesses. Economics is defined as an a priori science and the most highly developed of a group of sciences of human action in which the teleological and rational character of human behavior is paramount. It is part of a complete epistemological system embracing all of the social sciences. Human purposefulness imposes the constraint of reason on human action, and rationality governs purposeful behavior. There is no mere mechanical rationing of scarce resources among multiple ends such as it is charged the Robbins' definition implies. The issue boils down to the "acting" man of Mises versus the "economizing" man of Robbins.

In the reviewer's judgment, if the Robbins' definition is given the same sympathetic and broad interpretation that the praxeological definition is given, they both, in the final analysis, boil down to about the same thing. Only when the former definition receives an unsympathetic and pedestrian interpretation is the difference formidable. In any case, the author has written an excellent little book which does make a contribution to the literature, and which should make the praxeological definition of economics more widely known, if not more widely accepted.

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Zur Theorie der Industrialisierung. By Sigurd Klatt. Hypothesen über die Bedingungen, Wirkungen und Grenzen eines vorwiegend durch technischen Fortschritt bestimmten wirtschaftlichen Wachstums. Köln und Opladen: Westdeutscher Verlag, 1959. Pp. 546. DM 45.—.

This is the first volume in a new series of publications by the University of Hamburg, Institut für Industrie- und Gewerbepolitik. It sets a high standard for the books scheduled to appear later in the same series also under the editorship of Professor Fritz Voigt. One might have wished that fewer of the characteristics of a doctoral dissertation had been allowed to persist. To put it bluntly, the treatise could have done with some severe cutting.

As it is there are endless passages of merely expository interest, if that, heavily dosed with overdocumented opinions and assertions. Obviously, this is not because of poor editing, but rather reflects the intention of editor and author to provide links between the "pure" economics and the other aspects of the complex social-economic phenomenon described and analyzed as "industrialization." Author and editor are quite aware of their inability to "cover" all these aspects. They underestimate, however, the boredom inflicted upon a reader by continued cautioning against oversimplification and by the catalogues of "other factors," which take the place of whatever sociological, psychological or political analysis might be called for, if a complete theory of industrialization were to be attempted. The 90 pages of classified bibliography do, after all, point a way out of this dilemma. As it is, the book seems to offer few positive contributions beyond the sharpening of a few of the traditional tools of growth theory or the broadening of some of the concepts currently used. But it does give evidence of most careful and competent studies by the author in the recent literature on problems of economic growth. As such it provides a good basis for further research. But one might feel that this is the kind of book where benefits accrue to the author in writing it rather than to others in reading it. Thus, one can confidently expect any number of important contributions from the author. Since publication of the book, some articles by the same author already have appeared in professional Journals in Germany (see especially his article on Engel-curves in *Jahrbuch für Sozialwissenschaft*).

Industrialization is viewed as a long run relative growth process, a process of changing relations among the factors of production and among the sectors of an economy. The author's concept of structure owes much to A. G. B. Fisher with an emphasis on elasticities of demand as criteria for a structural ranking of industries. Essentially a classical tripartite structure with refinements introduced by Fourastie and M. Wolfe is used as a basis of analysis. Following W. G. Hoffmann, an additional breakdown of the secondary sector in capital goods—and consumer goods—industries is introduced. The author intends to arrange in a systematic order such contributions as have been made towards a theory of industrialization. His intentions being clearly theoretical, the author does not work from an historical and statistical basis, but rather chooses the theory of economic growth as a frame of reference and starting point. But, while keeping mostly to macroeconomic analysis, he aims at a lower level of abstraction as compared to the theory of growth. This is to avoid "misleading exactness," a warning which he takes from Domar. But rather than leave it up to other theories to supplement and complement the economic theory of relative growth in the secondary sector, the author insists that the theory of industrialization must in itself contain any such elements as condition and process. Karl Marx is extolled as precursor on this path toward adequately comprehensive analysis; although, of course, with the wrong assumptions as regards causal and functional relations in this system. The demonstration by the author of the essential identity in the result of Marx' analysis with the Domar-Harrod growth model may still come as a surprise. It has its place in the brief survey of the development of economic analysis as it applies to a theory of growth and industrialization. The expression of a growth process in terms of the quotient of savings rate and capital coefficient emerges then as the core of a dynamic theory of industrialization as assembled in the main part of the book.

The process of industrialization itself is analyzed in three phases which are described in terms of "Auslösung," "Ablauf," "Stagnation," but nevertheless are not primarily meant to convey a notion of historical sequences but refer to the functional interdependence between such factors and forces as bring about, propel, and/or hinder the process of industrialization.

The first phase is analyzed in terms of "regulators" and "impulses" of the process. The "active regulators" are the social factors involved, not in the sense of prerequisites or conditions, but in the sense that they develop along with the process of industrialization. The author proceeds here from the basis of a "theorem of static and dynamic consistency" which he takes from E. L. Hsu, according to which the pattern of economic and noneconomic behavior must be mutually compatible. It is against this background that the author proposes to check the questions of an "autonomy" in such tendencies, variables and parameters as constitute industrialization. Then there are the "passive regulators," the natural conditions. Finally, there are the regulatory forces of past economic decisions (Antezedenzien) preconditioning in a certain sense what can be done afterwards. Within this "field" of forces the "impulses," i.e., population growth and technical progress operate.

Both the treatment of population growth and of technological change and the integration of these parts into the general theory of industrialization are particularly successful. The treatment of the first problem relies mostly on G. Mackenroth, the treatment of the second complex leans heavily on W. Fellner. Less convincing seems the link between the impulses and the "impulse-receivers." The latter are those individuals (enterpreneurs)

and private and non-private institutions which are sufficiently sensitive to the impulses. But clearly, the impulse of technological change through innovation in itself reflects whatever it is that makes for the "sensitivity" in the response of impulse-receivers to impulses. These impulses, if sufficiently strong, are to bring about changes in the cost and revenue expectations of the impulse-receivers. Investment decisions realize such possibilities, and, if these decisions result in investments in the secondary sector, industrialization is under way. If this reasoning is not quite free from logical circles, the theory goes on to point the way to what might well turn out to be one of the more fruitful chances to gain new insight into the process of investment decisions. The author emphasizes the expectational qualities of the investment decision and especially the need to look for the "anomalous" expectations as the characteristic response of the impulse-receivers and as the trend-creating factor for the process of industrialization.

The process of industrialization, itself, then is analyzed in a modified growth model. Investments, consumer expenditures (and saving) and government expenditures (and revenues) are treated successively. This analysis is put through the paces of generally accepted theory, with the aid of some modest mathematics. It starts with a model of a closed economy without government economic activity and gradually widens to include government and international economies.

In the light of what the author earlier had to say on the relationship between industrialization and "other factors," it may be surprising to find that this part of the book actually takes as data all those interdependencies between the process and its "regulators" which the first part so laboriously had established. If this is less than what the author had hoped for, it certainly is a worthwhile procedure in terms of the clear presentation attained in this part of the book. The Domar-Harrod growth model is critically dissected; special attention to the growth effects of discrepancies between depreciation allowances and reinvestment yields some interesting insights; the cyclical influences are investigated with the help of a Hicks model; investment structures, i.e., the distribution of investments to the different sectors of an economy are explained in terms of varying demand elasticities.

A well balanced treatment is given to household decision-making. The core of this part is the analysis of consumer demand with systems of Engel-curves. Personal saving is treated essentially on the basis of Duesenberry's work.

There is a chapter on the effects of government spending, taxing and borrowing on the process of industrialization. Here one might deplore the self-imposed limitation which excludes any consideration of "government control." But rather than complain about what is left out one might bemoan the fact that a mere twenty pages are supposed to do justice to this rather vital complex. Musgrave's study (The Theory of Public Finance), unfortunately, had not appeared in time for this book to benefit from it.

Monetary, price, and income distribution aspects are also considered. The author finds arguments in support of Kaldor's suggestion that the long run income distribution is determined by the propensity to save of firms and households and by the aggregate growth rate. As the model is widened to include the effects of international relationships, the trade and invisible accounts are disaggregated to allow for a more realistic evaluation of the effect of import and export surpluses, respectively, on the secondary sector. Finally, there is a brief survey of some of the traditional stagnation theories as they apply to the overall growth of an economy and an "alternative stagnation theory" suggested by the author to apply to the relative growth of the secondary sector only. Of course, with this proviso it is not difficult to avoid the pessimistic speculation of the "mature economy" type: the limits to relative growth in one sector are indeed "inevitable" in the sense that they result from the same forces which had to be active to make the process of industrialization what it is, namely, the structure of demand. Only if both the primary and the tertiary sector were subject to negative demand elasticities, would a theory of stagnation in the relative growth of the secondary sector imply secular stagnation. There are, in this respect, no imminent forces other than the behavior of producers and consumers. This behavior provides the basis on which changes and shifts in the structure of an economy occur.

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Economic Growth and Planning. By Maurice Dobb. New York: Monthly Review Press, 1960. Pp. vii, 119. $3.50.

This book is not an attempt to deal exhaustively with either Economic Growth or with Planning as a problem of Economic Growth. By the author's admission, the book consists largely of lecture material which he has delivered during the past several years. Professor Dobb has, however, woven his material into a unified fabric.

Dobb argues that virtually all theories of economic growth have been based on the assumptions of market-oriented capitalism. The central problem of this essay, therefore, lies in questioning the applicability of the theories of economic growth now in vogue to the planned, centralized economy. It should come as no surprise to learn that Professor Dobb finds the market-oriented growth theories

inadequate for the analysis of planned economic growth problems. The author does not distinguish between other systems, such as market socialism which partakes of both central socialism and modern-day capitalism; presumably he regards the growth problems of a market socialist economy capable of analysis with existing growth theories.

The work is divided into six parts, including a chapter on planning in which Dobb discusses four ways in which the modus operandi of the planned economy differs from that of the unplanned economy. First he notes that investment in a planned economy is determined by a government policy-decision whereas in an unplanned economy investment is carried out in the market—admittedly with the likelihood of some market manipulation by the government. Second, he contends that the rate of investment is not governed by the time-preferences of individuals in the planned economy as it is in an unplanned economy. Third, Dobb sees profitability as playing a much less important role in determining the technical form of investment in the planned economy. Finally, insofar as the allocation of investment among the different sectors of the economy is concerned, the author again sees the two economies solving their problems differently.

Dobb feels that a major differentiating factor that deters growth or at least the most desirable growth (presumably more is better than less) in capitalistic economies is "secondary uncertainty arising from lack of communication, that is from one decision maker having no way of finding out the concurrent decisions and plans made by others" (p. 8). This could be an accurate observation with reference to underdeveloped economies but it appears to be in error to apply this observation to the mature economies of the "western" nations. To borrow from Schumpeter, capitalism has proven itself to be a virile, dynamic economic system. As such it is unwise to characterize it as it appeared at any one time or even as it appears today in its many forms. To live in a capitalistic nation is to make one aware of the very considerable role of government in influencing both the form and the totality of economic growth. Add to this the amazing institutional development which has served to facilitate the rapid movement of information from firm to firm, from sector to sector of the economy.

In the remainder of his book, Dobb looks into matters in detail which he has brought up in his section on planning. For example, in discussing Discounting the Future, he concludes that while he is unable to submit investment criteria of any preciseness on the matter, "some discount on time is betten than none" (p. 27). Dobb is at his best in the remainder of the book in which he analyzes the problems the planned economy faces in arriving at its choice of techniques in the investment and consumer goods scetors as well as the distribution of investment between sectors. In his final chapter on Price-Relations, Dobb acknowledges that in any actual planned situation there is bound to be some discretion allowed or at least tolerated in practice. Under these circumstances Dobb admits the influence of the price structure.

With books and journal articles on economic growth literally gushing forth onto an already saturated scene, another growth book is not likely to be greeted with wild acclaim. Nonetheless, students of growth and systems will find Dobb's book to be well worth examining. The work is both provocative and enlightening and the author once again manages to avoid the pedantry which so frequently characterizes the work of the academic economist.

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Inflation: Its Causes and Cures. By Gottfried Haberler. Washington, D. C.: American Enterprise Association, 1960. Pp. vi, 85. Paper, $1.00.

Haberler's purpose in this American Enterprise Association study is "to give a rounded picture and to emphasize fundamental issues which seem in danger of being obscured by the great mass that has been and is being written" on the causes and cures of inflation. Any reader, who would insist upon a clear statement of assumptions and upon the presentation of only those conclusions which follow logically from the analysis, is not likely to conclude that this study has achieved its stated objective. However, a reader, who is willing to accept a study designed to support an assertion that union power causes inflation and that inflation can best be cured through a curbing of that power, is likely to identify the picture as a "rounded" one. This essay appears to serve as a means of popularising the position Haberler maintained in his earlier essays in *The Impact of the Union* and in *The Public Stake in Union Power*. The popularization is likely to be achieved, for quantity discounts are available to purchasers of 25 or more copies of *Inflation: Its Causes and Cures.*

Haberler offers the wage-push assertion at a very early point in the essay, stating, "...we all know that the upward thrust on wages has become so strong that we shall be lucky if we can barely hold the price line and prevent a continuous upcreep of prices" (p. 6). Although agreeing that demand pull and an expanding money supply are more basic to inflation than wage push, Haberler contends that wage push tends to speed up demand pull inflation and that, even in the absence of further expansions in monetary demand, wages may continue to rise and to cause prices to continue to creep up. In fact,

he considers the continued rise of wages in the face of substantial unemployment after a halting of the expansion of monetary demand in 1957 and 1958 to suggest *strongly* that wage push has become an independent inflationary factor (p. 36).

Asserting that the American economy is very competitive, Haberler dismisses the Means-Galbraith administered price theory of inflation as making a negative contribution in its diversion of attention from the basic issues—demand pull and wage push. Demand pull is to be dismissed also, for "if a wage push did not exist in the first place, that is to say, if demand pull were the original cause of inflation, prolonged inflation is likely to create wage push, because inflation fosters the emergence of labor unions," giving unions prestige and power through which they take credit for easy wage increases which would have come anyway (p. 53). Furthermore, according to Haberler, upward wage flexibility accompanied by downward wage rigidity, leaves little margin for "creative inflation *á la* Schumpeter and Keynes" (p. 61) and contributes to the deficit in the balance of payments (p. 67).

After reading the first sixty-seven pages of this study, the reader can predict Haberler's "cure." His ideal policy would "remove cost push at the source while keeping a tight rein on aggregate demand by means of financial policies" (p. 73). Appearance of unemployment would not dictate an immediate release of the monetary brakes on inflation (p. 74), but the wage level would be prevented from outrunning the average productivity of labor. The problem "reduces to the question of whether and how the power of big labor unions can be curbed, because the big labor unions are the spearhead of the wage push" (p. 75).

Haberler would not curb union power through "measures so drastic as to be difficult to reconcile with individual freedom and free enterprise" (e.g., compulsory arbitration, government wage fixing, or splitting or dissolution of unions, p. 77) but, rather, would arouse public opinion to the dangers of wage inflation. An aroused public opinion would, in turn, force government "to pick up some courage" to tell unions "in no uncertain terms that their wage demands are inflationary and intolerable." Perhaps, as Haberler hopes, a "marked tendency for moderation in wage bargains" would follow from such pressures of public opinion and from governmental expression of the public opinion. At any rate, the availability of a 50 percent discount to purchasers of 500 or more copies of the essay may reduce the money cost of arousing public opinion.

E. E. Liebhafsky

Texas A. and M. College

Theories of Aggregate Income Distribution. By Paul Davidson. New Brunswick: Rutgers University Press, 1960. Pp. xii, 151. $5.00.

This is a short book with a long reach. It begins with the views of David Ricardo and ends with the views of Sidney Weintraub. The subject of the book is the distribution of the total product of an economy into relative shares. Two quotations in the introduction; one from Joan Robinson: "The mystery of the constant relative shares remain a reproach to theoretical economics"; the other quotation from Lord Keynes: "The stability of the proportion of the national dividend accuring to labour ... is one of the most surprising, yet best-established facts in the whole range of economic statistics ..." establish the subject of the book somewhat better, perhaps, than does the title.

Actually, the book is a report on the author's search through the literature for implicit and explicit theories of aggregate income distribution; and, as is probably unavoidable in such an inquiry, the thing sought-for discovers itself to the author in contexts that are not always entirely convincing to this reviewer.

Nonetheless, the book is well done, the inquiry is scholarly, and the conclusions—well, the conclusions are safe, as witness the statement in Chapter IX, *Some Conclusions and Observations:*

> Thus, for certain economic problems relating to economic growth at full employment, it may be desirable to use the aggregate demand analysis explicitly, while keeping in mind the necessary productivity relationships as indicated by the aggregative supply thesis. In determining the short-run effects, however, the Weintraubian analysis may prove to be more valuable (p. 107).

It is really impossible, within the limitations of time and space, to write a review of this book that satisfies the reviewer, let alone the author. Dr. Davidson undoubtedly spent many months reading and thinking about the writings of Ricardo, Marx, Von Thünen, Jevons, Marshall, Clark (J. B.), Douglas, Keynes, Boulding, Robinson, Kaldor, Weintraub, and others, in search of the particular views that he judged to be pertinent to his topic. Has he chosen well? Has he been fully aware of context? Has he drawn the right inferences? The only way to find out is to repeat the process, and there just isn't time, though it would be an interesting exercise, as the author has ably demonstrated.

John N. Webb

University of Florida

Aggregate Economics and Public Policy. By Barry N. Siegel. Homewood, Ill.: Richard D. Irwin, 1960. Pp. xiii, 337. $6.50.

The author of this book states in the preface that, "I attempted to bring students from an elementary level, about equivalent to the material in the first course in Economics, up to a sophisticated intermediate (or unsophisticated graduate) level of understanding.... The beginning level is quite elementary and, as the analysis proceeds, the level of difficulty rises. Important propositions, especially in the first seven chapters, are repeated fairly frequently, at the same time they are being combined with added complexities. I hope this device will help the learning process, even though it probably makes the book tedious at times" (p. ix).

This is a very accurate description of the technique the reader finds employed in this book. Accordingly, one may not, fairly, criticize either the repetition found in the first seven chapters of the book or the broad range of complexity which the student will find as he proceeds from Chapter 1 to the later chapters in the book. The author himself has some misgivings about the efficacy of the technique but it would appear to be a worthwhile experiment.

The book was developed in connection with, and is designed for, advanced undergraduate courses in the field of Aggregate Economics. One may also presume that the book was designed primarily, if not exclusively, for undergraduate Economics majors. For this limited use, I would consider the book excellent. The major portion of the book is probably too sophisticated for more general undergraduate use, but Chapters 8 through 18 should find broad use by graduate students as a handbook or guide to the best thinking and the most important literature available in the area of Aggregate Economics. The importance of aggregate economic theory to economic forecasting and public policy stands out very clearly in this section of the book.

Another possible use of this book may also be suggested. The Ford Foundation Report, *Higher Education for Business*, by R. A. Gordon and James E. Howell states: "We endorse the inclusion of 'aggregative economics' in the business curriculum" (p. 200). This proposal applies both to Master of Business Administration programs in graduate schools of business administration and to the curricula of undergraduate schools of business in the nation's universities and colleges. According to this Report, such a course should include: "national income accounting and analysis; economic indicators and measures; aggregative economic analysis, including both fluctuations and growth and with due consideration to the roll of money in a dynamic economy; forecasting for the economy and the firm; and problems of public policy concerned with stability and growth" (p. 201). Dr. Siegel's book contains all of these things, presented in a form which is consistent with the predilection for the quantitative approach found in the above mentioned Report. The same type of course and the same approach are also advocated for business school curricula by the companion Carnegie Foundation Report, *The Education of American Businessmen*, by Frank C. Pierson and others.

Although I have misgivings about the feasibility of using this book at the undergraduate level for business school students, I recommend it for use in connection with aggregative economics courses offered in graduate schools of business. Attention to individual economists and their contributions to the literature may be objected to by some business school faculty members teaching such a course. However, this attention is only incidental to the organization and content of the book. The author has added much that is original in producing what this writer considers a well organized synthesis of the material presented.

At only one point in this book do I find a failure to include new ideas that could be quite significant to the analysis; this is in connection with the discussion of government production and fiscal policy. Here, the new contributions of R. A. Musgrave in his *Theory of Public Finance* have important implications. I particularly regret the author's decision to dismiss criticisms of government expenditures with the following statement: "The only comment here will be to say that, of course, increased government expenditure is socialistic. All government activity is! Nevertheless, there is often more than a word at stake in periods of heavy unemployment" (p. 84). Musgrave's new book makes clear, for the first time, the extent to which the functioning of the public sector and the functioning of the private sector of our economy may be analyzed in largely analogous terms, and also the extent to which both sectors constitute essential and integral parts of the total economy.

WILLIAM D. ROSS
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Essays in Economics and Econometrics, A Volume in Honor of Harold Hotelling. Edited by Ralph W. Pfouts. Chapel Hill, N. C.: University of North Carolina Press, 1960. Pp. xi, 240. $7.50.

As in many Festschrift volumes, this well deserved tribute to Professor Hotelling contains a rich variety of fare. However, in Hotelling's case the variety is peculiarly appropriate in view of the great variety of fields to which he has contributed.

The volume is not lacking in stars among its

contributors—Kenneth Arrow, Harold Davis, Charles Ferguson, Milton Friedman, Ragnar Frisch, Leonid Hurwicz, Lawrence Klein, Ralph Pfouts, Paul Samuelson, Gerhard Tintner and William Vickrey. Frisch, Klein and Davis have written on econometric subjects, and Samuelson's paper discusses the structure of equilibrium systems possessing the abstract properties of the functions of classical thermodynamics.

The remaining papers fall easily under the head of economic theory or mathematical economics and to these I will confine my comments. Tintner sets up a system of demand relationships which take into account external economics of consumption and develops their consequences for a Slutsky-Hicks type of theory. Pfouts conducts a similar analysis of the effects of the inclusion of the level of savings and hours of work in the utility function. He concludes that these affect the usual results in several ways; for example, they produce a variety of income effects (relating either to changes in the rate of interest or changes in the consumer's stock of purchasing power) and they eliminate the homogeneity property of the standard demand equation. One may argue that the latter result is a consequence of the author's use of money rather than real savings. It is also worth noting that his budget equation, because it does not exclude negative savings, places no real limit on expenditures, but that is perhaps unavoidable so long as the use of the differential calculus forces the analysis to be confined to equality constraints.

Milton Friedman has a short piece in which he argues that even destabilizing speculation is not necessarily a social evil. His point is that if speculation adds somewhat to the amplitude of price oscillations, the disutility may conceivably not exceed the price which people are willing to pay for the creation of gambling opportunities, a proposition which it is difficult to dispute.

Vickrey and Ferguson discuss the Edgeworth taxation paradox, a subject to which Hotelling has made a notable contribution. Ferguson extends the analysis to other, less paradoxical cases, while Vickrey does a beautiful job of exposition making it perfectly clear how this sort of phenomenon can arise. It is worth summarizing one of his examples. The problem is to show how a tax on commodity A can conceivably result in a fall in the price of A as well as those of related commodities. Suppose A and B are two commodities which are substitutes in consumption and use a common ingredient, I, in their production. Suppose then, a tax on A tends to produce a shift in consumption toward B and that B uses less of input I in its manufacture than does A. The result may be a substantial reduction in the price of I as a result of which the prices of both A and B may be reduced below their initial levels as the Edgeworth case requires.

Vickrey does well to point out that Seligman was wrong in his sarcastic comment that the analysis "will surely be a grateful boon to the perplexed and weary secretaries of the treasury and ministers of finance." For from the point of view of economic welfare such an excise tax can be as undesirable as any other. Its only peculiar feature from this point of view is the fact that it bites into producers' rather than consumers' surplus.

The *pièce de résistance* of the volume is a 70 page paper by Arrow and Hurwicz, "Decentralization and Computation in Resource Allocation." This piece may be regarded as an outstandingly good exposition of the activity analysis approach to welfare economics and the optimal allocation of resources. The model, the mathematical equipment and the main theorems are all described with extreme clarity (though it must not be misunderstood to be a paper for those who are completely uninitiated mathematically). In particular, the mathematical problems which are raised by the case of increasing returns have, to my knowledge, never been described so explicitly. It may therefore be inappropriate for me to raise a rather picayune quibble, but it is really not meant for a reviewer to resist such a temptation. One of the statements made by these authors about the increasing returns case does not appear to me to be justified by them. They assert that in this situation it will not necessarily pay socially to produce its chosen output at minimum cost! Their argument is really quite simple. Given the available quantity of resources, it will pay to employ them fully if they all have positive marginal productivities throughout the relevant range. But, the authors assert, with increasing returns to specialization it pays to use only one of the inputs and leave the others totally unemployed. It is indeed true that the optimal output, Q, could be produced more cheaply if enough of resource R were available to permit the production of Q without the use of any of resource S. But, the trouble with the argument is that the available amounts of R and S together just suffice to produce Q. That is precisely the reason they are both used in its manufacture, and since this is the only way in which Q can be produced the cost involved is under the circumstances both the maximum *and the minimum* cost for that output. No one has ever maintained that the production of a given output should be conducted at the lowest cost possible in some completely hypothetical circumstances—it has only been maintained that society should do the best it can with the resources it has at hand.

WILLIAM J. BAUMOL

Princeton University

Local Impact of Foreign Trade: A Study in Methods of Local Economic Accounting. By W. Hochwald, H. E. Striner, and S. Sonenblum. Washington: National Planning Association, 1960. Pp. xvii, 213. $7; technical supplements, $1.50.

This study attempts to measure for three American communities the short-term impact of trade, both with foreign countries and with the rest of the United States, and to probe the methodological problems in developing local economic accounts. The statistical grist consists chiefly of input-output tables constructed for the communities as part of the study.

For each sector the authors estimate the income which is attributable to exports and to sales to the rest of the country. The inter-industry approach permits them to calculate the income created in one local sector when it sells to another local sector which in turn sells outside of the community. The study takes account of income produced through indirect exports, i.e., through sales by local industry to non-local U.S. industries that export goods. The inclusion of indirect exports raises the income derived from foreign trade so much that the authors conclude that some local industries underestimate their dependence on foreign markets. It is suggested, for example, that the employees of Kalamazoo's paper industry may be indifferent to tariff policy because they gain $700,000 of income through direct exports, but it is doubted that they would be indifferent if they knew that indirect exports add another $1.9 million of income. The study also distinguishes income created through direct and indirect sales to the final demand sectors of the United States, finding a negative correlation between them by sector.

Though the estimates were made to gain a more precise understanding of a community's stake in foreign trade, care must be taken on conceptual grounds in applying them to tariff debates. No one proposes autarchy for this nation; hence, marginal coefficients would seem more relevant than average coefficients. A local area may have a large average short-term stake in foreign trade but little concern for changes in U. S. trade if it has a strong comparative advantage over other American communities. Equally, a community with a low average coefficient may have much to gain through the expansion of U. S. trade if it is just below the margin in exporting additional goods.

The statistical results of the study involve some admittedly heroic assumptions. For example, to estimate the income attributable to indirect exports, it was necessary to assume that, of the goods sold by local industry to non-local U. S. industry, the proportion that is ultimately exported equals the proportion of the output of the purchasing industry which is sold abroad. This assumption will err, for example, when the input mix of the purchasing industry differs for domestic and export production, perhaps because the product mix of the two types of sales differs.

The data collected provide a wealth of detail on imports by the communities and their purchases within the United States. But, in contrast with the procedure for exports, little effort was made to estimate indirect imports, i.e., the import-content of purchases made by local industries from other U. S. industries that import. Unfortunately, in estimating the importance of competitive and complementary imports, the authors were unable to determine with satisfactory precision the initial impact of imports on the community from which the inter-industry effects could be calculated, though some results are provided.

The main contribution of the type of accounts developed in this book, according to the authors, is not in the measurement of the impact of trade but in aiding communities to adjust to shifts in the national and international economies. It is thought that they, along with projections and other data, will help analysts discern the sectors of the community that will grow or must grow if bottlenecks in local production are to be avoided. Since the key to successful development planning lies in the correct selection of industries for investment, it was not reassuring to the reviewer that the projections for 1954 of individual industries in Mobile, Alabama, from 1951 data showed wide deviations from the 1954 census returns, even though they were reasonably accurate in the aggregate. The reviewer also questions if, for aggregate projections, the simpler technique developed by J. J. Polak for nations in recent issues of the *International Monetary Fund Staff Papers* should not also be tested on local communities; as the book makes so clear, communities are like small countries in their heavy dependence on outside purchases and sales. If nothing else, the Polak technique allows for the induced consumption effects missing from inter-industry analysis.

The study makes abundantly clear the importance of distinguishing between the regional equivalents of gross national product and gross domestic product. Whereas the two differ negligibly for the United States as a whole, they diverge by more than 10% for Kalamazoo. The authors also find major disparities between the input coefficients of industries in the communities analyzed and in the nation as revealed by the BLS 1947 matrix. They suggest that these differences are largely spurious, resulting from different product mixes in the local and national account sectors, though no detailed examination of the evidence is provided. If true,

national coefficients of sufficient detail could be readily applied to local economic analysis.

It is easy to criticize the numerical findings of this study. The well-known deficiencies of input-output analysis apply, and the data problems are severe. (Some of the local coefficients had to be derived from national figures.) But it is not easy to criticize the authors. They are painfully aware of the problems and clearly state the assumptions, shortcomings, and qualifications to their analysis. Their candor in displaying the difficulties makes this an instructive book. Equally valuable is the discussion of methodology and the detailed explanation of the procedures employed to develop local economic accounts. The study shows that much can be done to put local data into a coherent framework.

WILSON E. SCHMIDT
The George Washington University

Regions, Resources, and Economic Growth. By Harvey S. Perloff, Edgar S. Dunn, Jr., Eric E. Lampard and Richard F. Muth. Baltimore, Md.: Johns Hopkins Press, 1960. Pp. ix, 716. $12.00.

There has not been a book as comprehensive in scope as *Regions, Resources, and Economic Growth* since the publication in 1943 of the first study of its kind for the United States, *Industrial Location and National Resources*.[1] The National Resources Planning Board sponsored the first study and the continuity of concern is reflected in the fact that the second is an undertaking of Resources for the Future, Inc. And in the almost twenty years that have elapsed, regional science and regional economics have come of age and all of this is reflected in the newer work, which is certain to be even more of a landmark than the first.

Throughout this outstanding work of scholarship is reflected the contribution of the senior editor, Harvey S. Perloff, in the grand design of the work as well as in its execution. The book consists of five parts. The first—to set the stage—is an introductory historical review of regional economic growth since 1870. The second contains the underlying theoretical and methodological framework of the study. The third (Lampard) is devoted to the detailed regional economic history of the United States over the period 1870–1950. In the fourth part (Dunn), changes in the regional distribution of economic activities over the period 1939–1954 are dealt with and the section includes an examination of the basic location factors of all the major industrial groups in the U. S. economy. In the fifth part (Muth), the study turns to regional differences in economic welfare in an analysis of per capita income levels and rates of growth.

Any investigation of a subject as complex as that of regional economic growth should have an underlying theoretical framework adequate for a broad general empirical study. This is undertaken in Part II, without any pretense of presenting (p. 62) "a formal general theory of regional economic development." And although the subsequent analysis would probably not be changed very much, Chapter 4, "Theories of Regional Economic Growth," seems to have been written with an awfully narrow criterion. The discussion of theories of regional economic growth is confined to two (and their subsequent extensions or modifications): the "export-base" theory (North) and the "sector" theory (Clark and Fisher). But the areas of general economics with theoretical models of significance to the subject matter of regional economic growth certainly go beyond these and include international trade, business cycles and economic growth, and theories of economic development in the underdeveloped nation context.

In part III Professor Lampard contributes a distinguished piece of economic history with a regional development focus, written as economic history should be written, with analytical and theoretical content. In fact, Parts I, II, and III can be utilized as a separate package in the teaching of U. S. economic history.

After the broad flow of historical change over the period 1870–1950, the book turns to the work of Professor Dunn in Part IV, where he does an unusually outstanding job of measuring and analyzing in great depth the basic changes in the regional distribution of economic activities over the period 1939–1954 (a period dictated by data requirements). The principal empirical tool he uses is his refinement of the shift technique (with employment data). The total employment shift for a region or a state over some given time period is the *relative* shift obtained by comparing the total *actual* employment in the terminal period with the total *expected* employment, defined as a total amount of employment which would have existed had growth for the state over the period been at the average rate for the nation as a whole. In turn, total employment shift consists of total *differential* (or competition) shift and total *proportionality* (or composition) shift. The proportionality shift exists because some sectors of the national economy grow more rapidly than others, and its relative strength over a group of regions or states depends on the geographical location of the rapid- and slow-growth sectors. The differential shift exists because, for the same industry, employment in some regions grows more rapidly than in

[1] National Resources Planning Board, *Industrial Location and National Resources* (Washington, D. C.: U. S. Government Printing Office, 1943).

others, a matter of comparative regional advantage. And his explanation of the broad forces changing our regional economies (as reflected in relative shifts) includes the best and most comprehensive examination now available of the basic location factors of major industries. Parts I, II, and IV may be regarded also as a meaningful separate venture into the matter of industrial location and regional economic change.

The uniformly high quality of the book is continued in Part V, where Muth (in the main) and Perloff explore the welfare consequences of uneven regional economic growth. In addition to an examination of the findings of existing studies, this section of the book is a penetrating analysis with additional insights into the matter of the basic causes of regional differences in the level of per capita income.

With respect to the recent economic growth of the South, the study shows the continuing, slowly declining gap for many states. In the deep South in particular old problems remain and new ones are emerging in spite of the movement toward the national average. For example, there have been upward shifts in manufacturing but there is still a predominance of slow-growth industries. And the heavy downward shift in agricultural employment has not yet had its anticipated effect because (pp. 597, 598)

> ...a predominantly agricultural region may continue to be subject to underemployment and limited improvements in income levels, despite substantial out-migration, as long as birth rates continue relatively high and there is a "filtering up" process (with the same size farms merely changing hands.).... The out-migration would normally have to be accompanied by a number of changes—such as the creation of larger farms, a higher ratio of capital inputs, or a more efficient use of labor—which add up to a higher productivity per farm worker.

JOSEPH AIROV

Emory University

Federal Receipts and Expenditures During Business Cycles, 1879–1958. By John M. Firestone. Princeton, N. J.: Princeton University Press, 1960. Pp. xvi, 176. $4.00.

The National Bureau of Economic Research rightfully receives substantial credit for leadership in compiling the record of cyclical behavior in the economy. Another study under its sponsorship is now available. Its purpose is to reveal the path of budget receipts and expenditures during cycles of the past eighty years for which data are available monthly. Five series are analyzed, all on a cash basis. The two aggregate series are total budget receipts and total budget expenditures excluding trust fund receipts and expenditures and including intra-governmental transactions. Three principal revenues—customs receipts, miscellaneous internal revenues, and income and profit tax receipts (beginning in 1911)—are analyzed separately.

No attempt is made to separate the change in tax revenues owing to rate changes from that produced by built-in flexibility under a given rate structure. To do so, as Firestone observes, would constitute a formidable task of model construction and data manipulation. However, a tabulation of the dates and directions of changes in revenue laws, when compared with the timing of "reference cycles" in business activity, indicates no countercyclical tendency in tax legislation. In fact, in a majority of cases during peacetime tax rate changes appear to have conformed inversely to the cycle. When the behavior of a series is averaged over several cycles it is felt that the emergent cyclical pattern is due almost entirely to "automatic" changes in the size of the tax base. The method of cyclical analysis employed in this study is familiar: each series is segmented according to the reference cycles of the NBER; for each reference cycle successive monthly percentages of the average value of the data are prepared; and the behavior of these "cycle relatives" over the nine stages of each successive reference cycle is observed.

The main findings refer to the behavior of receipts, expenditures, and surpluses or deficits in periods of peace and during war and transition periods. During peacetime, revenues show a persistent positive conformity to the cycle, rising with an increasing tax base during expansions and falling with a declining tax base during contractions. This pattern obtains from the earliest observations although the magnitude of the revenue swing was small relative to the cyclical change in GNP until the arrival of the income tax. Revenues in wartime expansion rise enormously, in part because of changes in tax legislation. Expenditures in peacetime show practically no conformity to the cycle. They typically rise during recession and recovery alike, indicating their systematic upward trend. Two exceptions to this pattern occur in the 1921–24 and 1924–27 cycles. Wartime expenditures obviously rise precipitously but fall more moderately, to remain at a new peacetime high. In each of the two transition period cycles (1919–21 and 1945–49) expenditures conform inversely, the postwar expenditure decline continuing through the subsequent expansion phase of the next cycle.

The surplus—or deficit—pattern shows the net effect of receipt and expenditure findings. Between 1879 and 1914 there was a persistent tendency for the net surplus to conform positively to the cycle, primarily because of the automatic cyclical response of revenues. During the interwar period the

amplitude of the swing was much increased but there was less uniformity in the pattern over successive cycles. Nevertheless, there was a discernible tendency for countercyclical surplus-deficit behavior, although with marked lags partly attributable to lags in income tax collections. The latest peacetime cycle, 1954–58, is the most recent example of positive cyclical conformity of the net surplus.

Studies such as this require the marshalling of a lengthy array of data even to a modest objective. Yet, at the margin, they add more to our understanding of systematic patterns in the economy than much of the effort popularly expended on pure models.

NORMAN V. BRECKNER
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Mill on the Dan: A History of Dan River Mills, 1882–1950. By Robert S. Smith. Durham, N. C.: Duke University Press, 1960. Pp. xi, 570. $12.50.

The definitive statement on Southern industrialization depends upon the continued discovery of this kind of material. As would be expected from a fine historian, Professor Smith has made excellent use of a wide array of source materials. The result is a meticulous record of a corporation's history from incomplete company archives, first hand accounts, and collateral data. In a sense, this is the second history of the cotton textile industry published within the year, for in many respects the history of Dan River Mills is a microcosmic example of the pattern of growth of the Southern cotton textile industry. Dan River is a "representative firm" for this purpose, reacting in typical fashion to the course of events shaping the industry. In some degree the history of this firm is more instructive of the history of the industry than in the brief, summary account presented by Mr. Blicksilver in his recent, *Cotton Manufacturing in the Southeast*.

Multiple objectives are cited in the preface, the primary objective is stated to be the description of origin and growth of one of the leading firms in the textile industry. Beyond this obvious goal, the author further intended a business history that incorporates the social impact of the firm upon its community as an example of Southern industrialization. The latter objective is less well attained, for analysis of the change from agrarian to industrial life in the Southeast receives only passing reference. The introduction of Piedmont and mountain folk of western Virginia and North Carolina to industrial descipline is only suggested, and the stated objective does not emerge as a clearly developed analysis of change. Within the narrower scope of describing the firm's relationship with the neighboring town a clearer picture is presented, and the growth of the mill village is quite fully described. Particularly in the early chapters the record of the company relationships with the local community, Danville, Virginia, is interesting, informative, and sometimes outright amusing.

The author also provides another case to cite in the controversy over the sources of capital for Southern industrialization. In contrast to the pervasive belief that Southern industry has grown upon a base of capital supplied by Northern investors, Dan River Mills was created with, and for the most part continued to be supplied with, local capital. The leadership of Dan River, as developed in these pages, is a fine example of entrepreneurship repidly fading from the Schumpeterian risk-taking type to the Veblenian permissive variety. Often the personal characteristics of a few of the leading personalities of the firm shine through the account of their behavior, lightening an otherwise rather heavy bit of work. Contained in the account are some excellent examples of the divorce between ownership and control. In fact, there are occasions when it would appear that management looked upon stockholders as more formidable antagonists than were rival firms.

There is a plethora of statistical information furnished to the reader, including extensive appendices of financial and production information. It is unfortunate that Professor Smith did not further pull together the elements of information contained in the book. A too brief summary at the end of the book is insufficient to provide the reader with a comprehensive picture of what happened to Dan River Mills over the course of its existence. There is so much minutiae that it is hard to see the whole. The analysis of internal operations is extremely detailed, but insufficient attention is given to marketing problems, and to real cost analysis as contrasted with conventional costing.

One of the highlights of the book is the insider's view of the attempt to control the consequences of excess capacity in an atomized industry. This was included because of the considerable role played by the president of Dan River in developing the Cotton Textile Institute in an attempt to evolve a "regulated competition," the recurring dream of the textile industrialist. In this historical review of the conditions of the industry, it is noteworthy that so many of the problems of thirty years ago are so similar to those of the present.

Every historian recognizes that he can please only some of his readers by any division he makes of his material. Still, it is evident that a major problem of the book is that common to business histories, periodization of the narrative resulting in a disjointed exposition of functional changes and operations. Despite any of these criticisms anyone who has attempted to obtain business records, par-

ticularly from cotton textile firms, will recognize the significance of Professor Smith's contribution.

BERNARD M. OLSEN
North Carolina State College

Wages and Earnings in the United States, 1860–1890. By Clarence D. Long. Princeton, N. J.: Princeton University Press, 1960. Pp. xviii, 169. $4.00.

This study of the changing level and structure of industrial wages in the United States in the nineteenth century was made by Professor Long for the National Bureau of Economic Research. It is one of several studies of the history of wages and productivity changes carried out by the National Bureau with funds supplied by the Alfred P. Sloan Foundation.

The present monograph, in keeping with his other valuable contributions to the study of labor markets, reflects the careful scholarship with which Professor Long approaches his special field of interest. The study examines the course of money wages (primarily daily wages in manufacturing and construction) during 1860 to 1890; it compares the movement of annual earnings with daily wages; it relates price and wage movements in a study of the buying power of daily wages and earnings during the period; and it explores wage differentials in terms of industries, regions, occupations, sex, and age. It is an especially interesting time in which to study wage and price movements, for the setting of the analysis is one of the most turbulent periods of American economic history. It is a period marked by war and its aftermath, by prosperity and depression, by the rise of modern unionism, and perhaps most important by the country's putting down its industrial roots and thus providing the base for the patterns of contemporary economic life in the United States.

Professor Long finds that money wages and earnings rose about 50 per cent from 1860 to 1890, and that the decline in prices after 1865 offset the Civil War increase, so that real wages also gained about 50 per cent. When adjustment is made for shortening of the average work day, the gain in both money and real terms is about 60 per cent. He finds that this is an increase of about 1.6 per cent compounded annually for the period, in contrast with the annual rise of 5 per cent in money wages and 2.75 per cent in real terms from 1914 to 1953 found by Wolman. The study concludes, with appropriate qualification, that regional differentials narrowed slightly outside the South, while occupation and sex differentials appear to have widened slightly. No net change appears to have occurred in industry differentials.

Significant features of the study include the careful testing of the reliability of the wage and price data available during the period, a wealth of source material for the thirty-year period, and particularly a new consumer price index for the decade of the 1880's prepared by Professor Long especially for this study.

Serious students of labor economics and economic history will be amply rewarded for reading this monograph. It provides new insights into a fascinating period of American history.

LANGSTON T. HAWLEY
University of Alabama

NOTES

The SOUTHERN ECONOMIC JOURNAL

Receipts and Expenditures for Fiscal Year 1959–1960

Balance November 1, 1959			$6,460.95
RECEIPTS			
University of North Carolina			
Balance Annual Grant for 1959–1960	$1,000.00		
Advance Annual Grant for 1960–1961	2,000.00	$3,000.00	
Southern Economic Association			
Annual Membership Dues	$3,210.00		
Institutional Membership Dues	600.00		
Student Membership Dues	102.00		
Contributing Membership Dues	10.00	$3,922.00	
Office of Managing Editor			
Subscriptions to Journal	$3,822.88		
Advertising	2,740.54		
Sales of Individual Copies	773.50		
Building and Loan Dividends	196.10		
Miscellaneous	510.80	$8,043.82	
Total Receipts			$14,965.82
Total Balance and Receipts			$21,426.77
EXPENDITURES			
Printing the Journal	$8,173.55		
General Expense	259.12		
Other Printing	79.70		
Postage	423.62		
Supplies	114.45		
Advertising	82.50		
Secretary's Salary and Wages	2,814.69		
Purchase of Back Copies of Journal	2.00		
Travel	258.50		
Refunds	24.00		
Total Expenditures		$12,232.13	
Balance		9,194.64	
Total Expenditures and Balance October 31, 1960			$21,426.77
INVESTMENT ACCOUNT			
Balance November 1, 1959			$4,359.27
Dividends Earned			196.10
Transferred from Checking Account			1,000.00
Total October 31, 1960			$5,555.37
FUND BALANCES			
Checking Account, University National Bank, Chapel Hill, N. C.			$3,639.27
Investment Account, Orange County Building and Loan Association, Chapel Hill, N. C.			5,555.37
Total Funds October 31, 1960			$9,194.64

G. T. SCHWENNING
Managing Editor

SOUTHERN ECONOMIC ASSOCIATION

Receipts and Expenditures—Oct. 1, 1959–Oct. 31, 1960

Cash on Hand, First National Bank, Atlanta, Ga., Oct. 1, 1959		$796.45
RECEIPTS		
Dues	$5199.10	
Registration Fees	378.00	
Advertising and Exhibit Space	300.00	
Total Receipts	$5877.10	
EXPENDITURES		
Southern Economic Journal	$4310.00*	
Convention Programs—Printing and Mailing	770.75	
Postage	218.45	
Convention Expense	139.52	
Printing, Stationary, and Duplicating Services	149.56	
Miscellaneous Expenses	59.88	
Total Expenditures	5648.16	
Gain for the Year		228.94
Cash, Louisiana National Bank, Baton Rouge, La., October 31, 1960	$603.29	
Checks on Hand, October 31, 1960	422.10	
Total Cash, October 31, 1960		$1025.39
SAVINGS ACCOUNT		
Balance, Oct. 1, 1959, First National Bank, Atlanta, Ga		$664.97
Interest		20.07
Balance, Oct. 31, 1960, First National Bank, Atlanta, Ga.		$685.04

COMPARATIVE STATISTICS

	Receipts	Expenditures	Gain/(Loss)
Year Ended Sept. 30, 1958	$3711.80	$3885.22	$(173.42)
Year Ended Sept. 30, 1959	5073.50	4900.98	172.52
Fiscal Period Ended Oct. 31, 1960	5877.10	5648.16	228.94

MEMBERSHIP STATISTICS

1940	223	1950	512	1956	666
1945	163	1951	523	1957	647
1946	248	1952	533	1958	749
1947	330	1953	540	1959	765
1949	447	1954	569	1960	779
		1955	603		

* Includes $388.00 which was shown in the 1959 report of the Southern Economic Journal as receipts. Hereafter, the Journal and the Association will use the same fiscal period.

WILLIAM H. WESSON, JR.
Secretary-Treasurer

DEATH

John H. Workman, chairman of the Department of Economics at Appalachian State Teachers College, died April 3, 1960.

APPOINTMENTS, PROMOTIONS AND RESIGNATIONS

R. O. Arrington has been appointed instructor of marketing at Troy State College.

Stan Baff has been appointed instructor of economics at Troy State College.

Lee Bidgood, dean emeritus of the School of Commerce and Business Administration, University of Alabama, has been appointed research coordinator of the Alabama Business Research Council.

Joseph A. Billings joined the staff of Park College as assistant professor in September, 1959.

Norman N. Bowsher has been promoted to senior economist at the Federal Reserve Bank of St. Louis.

Horace R. Brock of North Texas State College is visiting professor of accounting at Arizona State University during the Spring Semester, 1961.

Allan M. Cartter, professor of economics and dean of the Graduate School of Arts and Sciences, Duke University, was elected a member of the executive committee of the Southern Economic Association.

Marshall R. Colberg, chairman of the Department of Economics at Florida State University, was elected president-elect of the Southern Economic Association for 1961–1962.

Horace B. Davis has been appointed head of the Department of Economics at Shaw University.

Frank T. de Vyver, chairman of the Department of Economics and Business Administration and assistant provost at Duke University, was elected president of the Southern Economic Association for 1960–1961.

Robert L. Dickens, associate professor of accounting in the Department of Economics and Business Administration, Duke University, has been appointed assistant to the dean of the university.

Theo H. Ellis has resigned as agricultural economist of the Farm Economics Research Division, ARS, U.S. Department of Agriculture, to accept a position as associate agricultural economist at Auburn University. He will conduct research in farm management and production economics and will serve as associate director of the University's IBM Computer Center.

Daniel P. Garrett has been appointed assistant professor of business administration at Birmingham-Southern College.

Claude S. George, Jr., professor of industrial management and assistant dean of the School of Business Administration, University of North Carolina, has been appointed to the editorial board of the *Journal of the Academy of Management*.

Garvin C. Gillum, assistant professor of business at the School of the Ozarks, was named head of the Business Department in January 1961.

Henry C. Gold, of the Department of Economics at Oklahoma City University, has been appointed director of Community Affairs at that institution.

William E. Gordon was named associate professor and chairman, Department of Economics and Business Administration, at Park College at the beginning of the 1959–1960 academic year.

Mark Hanna, of the Department of Economics and Business Administration, Auburn University, is taking a leave-of-absence the winter quarter, 1961, for the purpose of continuing his graduate work at the University of North Carolina.

Rolf Hayn, assistant professor of economics at the University of Oklahoma, has resigned to accept an appointment as economic affairs officer with the UN secretariat.

Benjamin Higgins, professor of economics at the University of Texas, was elected a member of the executive committee of the Southern Economic Association.

John M. Huie has been appointed assistant in rural sociology at Auburn University and will be engaged in full-time research on problems of social and economic adjustments in low-income rural areas of Alabama.

R. I. Koszelka, formerly dean of the School of Business, University of Minnesota, is serving as visiting lecturer in the College of Business Administration, University of Florida, during the spring semester of 1961.

Richard H. Leftwich, professor of economics at Oklahoma State University, was elected vice-president of the Southern Economic Association for 1960–1961.

Irving O. Linger has been appointed chairman of the Department of Economics at Texas College of Arts and Industries.

Gordon L. Lippitt, formerly program director at National Training Laboratories, National Education Association, has been appointed professor and director of the Center for the Behavioral Sciences, School of Government, Business, and International Affairs, George Washington University.

Stephen L. McDonald, professor of economics and chairman of the Department of Economics at Louisiana State University, has been elected a member of the board of editors of the *Southern Economic Journal*.

George Macesich, professor of economics at Florida State University, was elected a member of

the board of editors of the *Southern Economic Journal*.

Charles D. Maddox has been appointed agricultural economist with the Alabama Agricultural Extension Service, Auburn University, and will be engaged in full-time extension work as a farm management specialist.

Richard W. Massey, Jr. has been appointed associate professor of economics at Birmingham-Southern College.

A. James Meigs has been promoted to assistant vice-president in the research department of the Federal Reserve Bank of St. Louis.

Eliner Pancoast, chairman of the Department of Economics at Goucher College, will retire at the end of this academic year.

George W. Patton, associate professor of economics at Auburn University, returned to his position January 1st after an absence due to illness.

W. N. Peach, chairman of the Department of Economics at the University of Oklahoma, has returned from an International Cooperation Administration mission to Sierra Leone and Yemen.

Ralph W. Pfouts, professor of economics and chairman of Graduate Studies in the School of Business Administration and the Department of Economics, University of North Carolina, was elected vice-president of the Southern Economic Association for 1960–1961. He has also been elected to the board of editors of *Metroeconomica*.

Bevie Truett Sanders of Arizona State University is visiting associate professor of accounting at North Texas State College during the Spring Semester, 1961.

Gregor Sebba, formerly professor of economics at the University of Georgia, has been appointed professor in the Graduate Institute of the Liberal Arts, Emory University.

Edward C. Simmons, professor of economics at Duke University, will be on sabbatical leave during the academic year 1961–1962.

Donald R. Street has been appointed instructor in the Department of Economics and Business Administration at Auburn University, effective the winter quarter 1961.

Jimmie C. Styles, formerly of Panama City Junior College, has been appointed instructor of accounting at Troy State College.

Norman Sun has resigned the position of chairman, Department of Economics and Business Administration, at Park College.

Martha Taber, formerly of Washington College, has been appointed chairman of the Department of Economics at Goucher College.

Raymond D. Thomas, formerly dean, School of Business of Oklahoma State University, has been professor of economics and business administration at Drury College since September, 1959.

Gladys B. Tupper has been serving as instructor of economics at Southwest Baptist College (Mo.) for the past two academic years.

F. W. Tuttle was promoted to professor of economics, University of Florida, effective February 1, 1961.

George J. Viksnins was appointed instructor in economics at Hood College in the fall of 1960.

William H. Wesson, Jr., professor of economics at the University of South Carolina, was re-elected secretary-treasurer of the Southern Economic Association.

Shirley F. Woodell, formerly vice-president of J. Walter Thompson Company, has been appointed the first distinguished lecturer in residence in the School of Business Administration, University of North Carolina.

NEW MEMBERS

The following names have been added to the membership of the Southern Economic Association:

John H. Abernathy, Jr., P. O. Box 271, State College, Miss.

O. Burton Adams, Columbus College, Columbus, Ga.

Wendell M. Adamson, 1223 South Taylor Street, Arlington, Va.

John R. Bangs, 1839 N. W. 31st Terrace, Gainesville, Fla.

Gilbert Barner, University of Tennessee, Knoxville, Tenn.

Lee A. Barclay, Alabama College, Montevallo, Ala.

William L. Blachman, Louisiana State University in New Orleans, New Orleans, La.

Gerald B. Blakeman, Nicholls State College, Thibodaux, La.

Clayton F. Bolling, East Tennessee State College, Johnson City, Tenn.

Theodore C. Boyden, Joint Council on Economic Education, New York, N.Y.

E. R. Browning, East Carolina College, Greenville, N. C.

Gordon Brunhild, University of South Florida, Tampa, Fla.

Leoni Bruno, University of Virginia, Charlottesville, Va.

Howard McRaven Bunch, Southwest Research Institute, San Antonio, Tex.

Norman G. Busse, Tennessee Polytechnic Institute, Cookville, Tenn.

Leonard J. Cartier, Tennessee Polytechnic Institute, Cookville, Tenn.

Mahinder Datt Chaudhry, Duke University, Durham, N. C.

Yu-Min Chou, Baylor University, Waco, Tex.

R. H. Coase, University of Virginia, Charlottesville, Va.

J. Van B. Coe, 261 North Jackson Street, Athens, Tenn.
Andrew J. Cooper, III, Princeton University, Princeton, N. J.
Richard Cox, S. J., 213 McCauley Street, Chapel Hill, N. C.
J. Gaylord Cummins, Tulane University, New Orleans, La.
John W. Darr, P. O. Box 1135, State College, Miss.
Lewis E. Davids, University of Georgia, Athens, Ga.
Leslie E. Davis, Mississippi State University, State College, Miss.
Lyndon E. Dawson, Jr., Auburn University, Auburn, Ala.
Dan D. Doty, Box 282, State College, Miss.
Akhilesh Dubey, Atlanta University, Atlanta, Ga.
James H. Duke, University of Florida, Gainesville, Fla.
Richard M. Duvall, Duke University, Durham, N. C.
Carl T. Eakin, University of Georgia, Athens, Ga.
Pat Ellebracht, Arkansas State College, State College, Ark.
John S. Ellett, II, Maxwellton, Route 3, Charlottesville, Va.
Joseph C. Ellett, Furman University, Greenville, S. C.
Persis R. Emmett, Florida State University, Tallahassee, Fla.
Clyde L. Erwin, Auburn University, Auburn, Ala.
A. C. Flora, Jr., University of South Carolina, Columbia, S. C.
Robert Earl Garren, Georgia State College, Atlanta, Ga.
W. D. Geer, Howard College, Birmingham, Ala.
Edward L. Jack Goebel, University of Georgia, Athens, Ga.
Anne Gray, University of North Carolina, Chapel Hill, N. C.
Otha L. Gray, Georgia State College, Atlanta, Ga.
James L. Green, University of Georgia, Athens, Ga.
Ernest W. Grove, 5429 South 5th Street, Arlington, Va.
Rector R. Hardin, Box 76, Station A, Hattiesburg, Miss.
H. H. Haymes, 22 Paradise Road, Northampton, Mass.
Billy Franklin Heard, 309 E. Dixie Avenue, Marietta, Ga.
William Ross Heck, Florida State University, Tallahassee, Fla.
Peggy Heim, American Association of University Professors, Washington, D. C.
Walter James Herman, University of South Florida, Tampa, Fla.
Lyle S. Hiatt, Alabama College, Montevallo, Ala.
Benjamin H. Higgins, University of Texas, Austin, Tex.
Albert A. Hirsch, Federal Reserve Bank of Atlanta, Atlanta, Ga.
Paul T. Homan, Southern Methodist University, Dallas, Tex.
Steven Hunter, Curdland, Batesville, Va.
Warren L. Jensen, University of Georgia, Athens, Ga.
James R. Kantner, P. O. Box 163, Barnesville, Ga.
William B. Keeling, 456 Milledge Heights, Athens, Ga.
Patrick S. Kemp, Emory University, Atlanta, Ga.
Jay B. Kennedy, University of South Florida, Tampa, Fla.
Robert L. King, University of South Carolina, Columbia, C. C.
H. J. Lacher, 440 Cloverhurst Avenue, Athens, Ga.
John D. Lafky, 1520 A, Brackenridge Apts., Austin, Tex.
David T. Lapkin, University of North Carolina, Chapel Hill, N. C.
David P. Lewis, Valdosta State College, Valdosta, Ga.
Jack R. Lichte, Box 365, State College, Miss.
S. T. Lowery, Washington and Lee University, Lexington, Va.
Joseph L. McAuliff, 401 Haney Drive, Chattanooga, Tenn.
Ray N. McCleskey, 1306 James Blvd., Signal Mountain, Tenn.
Winifred Fowler McKnight, 333 East 46 Street, New York 17, N. Y.
J. I. Maloy, Jr., P. O. Box 222, Dahlonega, Ga.
Charles F. Martin, Agnes Scott College, Decatur, Ga.
Thomas R. Masterson, Emory University, Atlanta, Ga.
Sid Mittra, Stetson University, DeLand, Fla.
Edward W. Navickas, Jr., Georgia Institute of Technology, Atlanta, Ga.
J. R. Otis, P. O. Box 351, Tuskegee, Ala.
David J. Ott, Southern Methodist University, Dallas, Tex.
Roy Ott, Jr., Harding College, Searcy, Ark.
Robert E. Payne, 1290 McLendon Avenue, N. E., Atlanta, Ga.
Guy T. Peden, Jr., P. O. Box 702, State College, Miss.
David R. Pender, 1018 Marion Street, Columbia, S. C.
Charles E. Phillips, Jr., Washington and Lee University, Lexington, Va.
Joseph D. Phillips, The Citadel, Charleston, S. C.
Warren A Pillsbury, University of Virginia, Charlottesville, Va.
Robert J. Porter, University of North Carolina, Chapel Hill, N. C.

Charles F. Poston, University of Akron, Akron, Ohio.
Neal A. Rasmussen, 5101 Madison Road, Cincinnati, Ohio.
William S. Rawson, Shorter College, Rome, Ga.
Ira Jack Rees, University of Georgia, Athens, Ga.
Jim E. Reese, University of Oklahoma, Norman, Okla.
John J. Reid, University of Virginia, Charlottesville, Va.
G. M. Richardson, Southern Institute of Technology, Chamblee, Ga.
J. William Rush, P. O. Box 928, State College, Miss.
William T. Ryan, Columbus College, Columbus, Ga.
William A. Sandridge, Roanoke College, Salem, Va.
Richard Edward Sanner, 671 Hillpine Drive, N.E., Atlanta, Ga.
William A. Schaffer, Duke University, Durham, N. C.
Martin Schnitzer, Virginia Polytechnic Institute, Blacksburg, Va.
Ezzedin M. Shamsedin, University of South Carolina, Columbia, S. C.
William O. Shropshire, Duke University, Durham, N. C.
J. P. Simpson, Louisiana State University in New Orleans, New Orleans, La.
Lewis S. Sinclair, Tennessee Valley Authority, Knoxville, Tenn.
Anna Greene Smith, Agnes Scott College, Decatur, Ga.
Charles D. Smith, University of Florida, Gainesville, Fla.
Jon Douglas Smith, 108 Sterrett Court, Birmingham, Ala.
Jean Robert Spichiger, 600 Homedale Avenue, New Orleans, La.
G. T. Stewart, Route 2, Box 89, Adamsville, Ala.
Wilma D. Stricklin, 1522 Paloma Street, Pasadena, Calif.
C. A. Thomas, Jr., Route 2, Hopkinsville, Ky.
John Clair Thompson, University of Louisville, Louisville, Ky.
O. G. Thompson, North Carolina State College, Raleigh, N. C.
James E. Thorogood, University of the South, Sewanee, Tenn.
Wallace D. Trevillian, Clemson College, Clemson, S. C.
Bruno M. Trevino, University of Southwestern Louisiana, Lafayette, La.
Chipei P. Tseng, Emory University, Atlanta, Ga.
Jerry W. Upton, Nicholls State College, Thibodaux, La.
Richard C. Vreeland, University of Florida, Gainesville, Fla.
Gustavus G. Williamson, Jr., University of South Carolina, Columbia, S. C.
Edward L. Winn, University of South Carolina, Columbia, S. C.
Newell Witherspoon, Maryville College, Maryville, Tenn.
William W. Wright, Jr., Wofford College, Spartanburg, S. C.
William D. Wubben, Davidson College, Davidson, N. C.

BOOKS RECEIVED

Åkerman, Johan. *Samhällsstruktur och Ekonomisk Teori*. Lund, Sweden: C. W. K. Gleerup, 1960. Pp. 139. Pris 9 kr.

Åkerman, Johan. *Theory of Industrialism: Causal Analysis and Economic Plans*. Lund, Sweden: Hakan Ohlssons Boktryckeri, 1960. Pp. 332. Price: 25 kronor.

Aspectos Monetarios de Las Economias Latinoamericanas, 1959. Mexico: Centro de Estudios Monetarios Latinoamericanos, 1960. Pp. 328.

Bakken, Henry H. and others. *Futures Trading Seminar: History and Development*. Vol. I. Madison, Wis.: Mimir Publishers, 1960. Pp. xii, 283. $3.00.

Boulding, Kenneth E. and Spivey, W. Allen. *Linear Programming and the Theory of the Firm*. New York: Macmillan Company, 1960. Pp. ix, 227. $6.00.

Bry, Gerhard. *Wages in Germany, 1871–1945*. Princeton, N. J.: Princeton University Press, 1960. Pp. xxvi, 486. $10.00.

Buchanan, James M. *Fiscal Theory and Political Economy*. Chapel Hill, N. C.: University of North Carolina Press, 1960. Pp. 197. $5.00.

Buckingham, Walter. *Automation: Its Social and Economic Impact*. New York: Harper & Brothers, 1961. Pp. ix, 196. $4.50.

Carswell, John. *The South Sea Bubble*. Stanford, Calif.: Stanford University Press, 1960. Pp. xii, 314. $5.50.

Churchill, Ruel V. *Complex Variables and Applications*. 2nd ed. New York: McGraw-Hill Book Company, 1960. Pp. ix, 297. $6.75.

Classics in Economics: A Course of Selected Reading by Authorities. New York: Philosophical Library, 1960. Pp. xxxi, 324. $6.00.

Compensating First-Line Supervisors in Factory and Office. New York: National Industrial Conference Board, 1960. Pp. 88. Paper, $3.50 for Associates, $17.50 for non-Associates.

Creamer, Daniel and others. *Capital in Manufacturing and Mining: Its Formation and Financing*. Princeton, N. J.: Princeton University Press, 1960. Pp. iv, 344. $7.50.

Dahlberg, Arthur. *Money in Motion: A Graphic Portrayal of the Nature of Money and the American Monetary System*. New York: John de Graff, 1961. Pp. xvii, 141. $5.95.

Deming, W. Edwards. *Sample Design in Business Research*. New York: John Wiley & Sons, 1960. Pp. xx, 517. $12.00.

Devino, William Stanley. *Exhaustion of Unemployment Benefits During A Recession: A Case Study*. East Lansing, Mich.: Michigan State University, 1960. Pp. ix, 78. Paper, $1.50.

Ferguson, E. James, *The Power of the Purse: A History of American Public Finance, 1776–1790*. Chapel Hill, N. C.: University of North Carolina Press, 1961. Pp. viii, 358. $7.50.

Fogel, Robert W. *The Union Pacific Railroad: A Case in Premature Enterprise*. Baltimore, Md.: Johns Hopkins Press, 1960. Pp. ix, 129. $3.50.

Freeman, Roger A. *Taxes for the Schools*. Washington, D.C.: Institute for Social Science Research, 1960. Pp. xxxvii, 441. $5.00.

Gates, Paul W. *The Farmer's Age: Agriculture, 1815–1860*. New York: Holt, Rinehart and Winston, 1960. Pp. xviii, 460. $6.00.

Haber, William and Cohen, Wilbur J. *Social Security: Programs, Problems, and Policies*. Homewood, Ill.: Richard D. Irwin, 1960. Pp. xv, 606. $8.75.

Halm, George N. *Economic Systems: A Comparative Analysis*. Rev. ed. New York: Holt, Rinehart and Winston, 1960. Pp. ix, 341. $5.00.

Hansen, Alvin H. *Economic Issues of the 1960s*. New York: McGraw-Hill Book Company, 1960. Pp. xv, 244. $5.50.

Harris, Seymour E. (ed.). *American Economic History*. New York: McGraw-Hill Book Company, 1961. Pp. ix, 560. $7.95.

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Hickman, W. Braddock. *Statistical Measures of Corporate Bond Financing Since 1900*. Princeton, N. J.: Princeton University Press, 1960. Pp. xxx, 582. $9.00.

Holmes, Parker M. *Marketing Research: Principles and Readings*. Cincinnati, Ohio: South-Western Publishing Company, 1960. Pp. x, 646. $7.50.

Kaldor, Nicholas. *Essays on Economic Stability and Growth*. Glencoe, Ill.: Free Press, 1960. Pp. 300. $6.75.

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Kimble, George H. T. *Tropical Africa*. Volumes 1 and 2. New York: Twentieth Century Fund, 1960. Pp. 1109. $15.00.

Levin, Harvey J. *Broadcast Regulation and Joint Ownership of Media*. New York: New York University Press, 1960. Pp. xviii, 219. $4.50.

Levin, Jonathan V. *The Export Economies: Their Pattern of Development in Historical Perspective*. Cambridge, Mass.: Harvard University Press, 1960. Pp. xiv, 347. $6.75.

McCracken, Paul W. (ed.). *Taxes and Economic Growth in Michigan*. Kalamazoo, Mich.: Up-

john Institute for Employment Research, 1960. Pp. xi, 167. $4.75.

McKinney, George W. *The Federal Reserve Discount Window: Administration in the Fifth District*. New Brunswick, N. J.: Rutgers University Press, 1960. Pp. xi, 157. $4.50.

May, John Amasa and Faunt, Joan Reynolds. *South Carolina Secedes*. Columbia, S. C.: University of South Carolina Press, 1960. Pp. xv, 231. $4.00.

Meij, J. L. (ed.). *Mechanization in Agriculture*. Chicago, Ill.: Quadrangle Books, 1960. Pp. xi, 379. $8.75.

Mergers and Markets: An Economic Analysis of Case Law. New York: National Industrial Conference Board, 1960. Pp. 143. Paper, $2.50 for Associates, $12.50 for non-Associates.

Michal, Jan M. *Central Planning in Czechoslovakia: Organization for Growth in a Mature Economy*. Stanford, Calif.: Stanford University Press, 1960. Pp. xii, 274. $5.75.

Modern Land Policy. Land Economics Institute. Urbana, Ill.: University of Illinois Press, 1960. Pp. vii, 449. $8.50.

Moore, Wilbert E. and Feldman, Arnold S. (eds.). *Labor Commitment and Social Change in Developing Areas*. New York: Social Science Research Council, 1960. Pp. xv, 378. $3.75.

Mowbray, Albert H. and Blanchard, Ralph H. *Insurance: Its Theory and Practice in the United States*. 5th ed. New York: McGraw-Hill Book Company, 1961. Pp. xiii, 617. $7.50.

Mund, Vernon A. *Government and Business*. 3rd ed. New York: Harper & Brothers, 1961. Pp. x, 548. $7.00.

Murray, William G. and Nelson, Aaron G. *Agricultural Finance*. 4th ed. Ames, Iowa: Iowa State University Press, 1960. Pp. x, 486. $6.50.

Parmelee, Maurice. *The History of Modern Culture*. New York: Philosophical Library, 1960. Pp. 1295. $10.00.

Preston, Lee E. *Exploration for Non-ferrous Metals: An Economic Analysis*. Washington, D. C.: Resources for the Future, 1960. Pp. x, 198. Paper, $2.00.

Rapoport, Anatol. *Fights, Games and Debates*. Ann Arbor, Mich.: University of Michigan Press, 1960. Pp. xvi, 400. $6.95.

Ray, Delmas D. *Accounting and Business Fluctuations*. Gainesville, Fla.: University of Florida Press, 1960. Pp. xii, 184. $6.50.

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Schoeck, Helmut and Wiggins, James W. (eds.). *Scientism and Values*. Princeton, N. J.: D. Van Nostrand Company, 1960. Pp. xvi, 270. $6.50.

Schurr, Sam H. and Netschert, Bruce C. *Energy in the American Economy, 1850–1975: Its History and Prospects*. Baltimore, Md.: The Johns Hopkins Press, 1960. Pp. xxii, 774. $12.50.

Severance Pay Patterns in Nonmanufacturing. New York: National Industrial Conference Board, 1960. Pp. 32. Paper, $2.50 for Associates, $12.50 for non-Associates.

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